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POLLUTION OF THE INTERSTATE WATERS OF LONG ISLAND SOUND AND ITS TRIBUTARIES-CONNECTICUT-NEW YORK. PROCEEDINGS OF CONFERENCE HELD AT NEW HAVEN, CONNECTICUT ON APRIL 13-14, 1971. VOLUME 1

Environmental Protection Agency
Washington, D. C.

1971

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CONFERENCE

IN THE MATTER OF POLLUTION OF
THE INTERSTATE WATERS OF LONG ISLAND SOUND AND ITS TRIBUTARIES
IN THE STATES OF CONNECTICUT AND NEW YORK

held in

New Haven, Connecticut

April 13 - 14, 1971

TRANSCRIPT OF PROCEEDINGS

419

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The report is on

The conference in the ~~matter of~~ on pollution of the interstate waters of Long Island Sound and its tributaries in the States of Connecticut and New York convened at 9:30 a.m., on April 13, for 1971, at the New Haven Motor Inn, New Haven Connecticut. It includes statements, discussions, and recommendations, on: Water quality efforts; population distribution; recreation; New London harbor; clam resources; and related information.

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PROCEEDINGS

OPENING STATEMENT
BY
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MR. STEIN: The conference is open.

This conference in the matter of pollution of the interstate waters of Long Island Sound and its tributaries in the States of Connecticut and New York is being held under the provisions of section 10 of the Federal Water Pollution Control Act, as amended.

Under the provisions of the act, the Administrator of the Environmental Protection Agency is authorized to initiate a conference of this type when on the basis of reports, surveys, or studies he has reason to believe that pollution subject to abatement under the Federal act is occurring.

As specified in section 10 of the act, the official State and interstate water pollution control agencies have been notified of this conference by Administrator Ruckelshaus. These agencies are the Connecticut Water Resources Comission, the New York State Department of Environmental Conservation, the Interstate Sanitation Commission, and the New England Interstate Water Pollution

Control Commission.

In addition, we have invited the New England River Basins Commission to sit with us on the panel.

Both the State and Federal governments have responsibilities in dealing with water pollution control problems. The Federal Water Pollution Control Act declares that the States have primary rights and responsibilities for taking action to abate and control pollution. Consistent with this, we are charged by law to encourage the States in these activities.

At the same time, the Administrator, Environmental Protection Agency, is charged by law with specific responsibilities in the field of water pollution control in connection with pollution of interstate and navigable waters. The Federal Water Pollution Control Act provides that pollution of interstate or navigable waters which endangers the health or welfare of any persons shall be subject to abatement. This applies whether the matter causing or contributing to the pollution is discharged directly into such waters or reaches such waters after discharge into a tributary.

The purpose of the conference is to bring together the State and interstate water pollution control agencies, representatives of the U. S. Environmental

Protection Agency, and other interested parties to review the existing situation and the progress which has been made, to lay a basis for future action by all parties concerned, and to give the States, localities, and industries an opportunity to take any indicated remedial action under State and local law.

The Connecticut Water Resources Commission will be represented by Mr. John Curry.

The New York State Department of Environmental Conservation will be represented by Mr. Dwight Metzler.

The Interstate Sanitation Commission will be represented by Mr. Thomas Glenn.

The representative of the New England Water Pollution Control Commission is Mr. Alfred E. Peloquin.

The Federal conferee is Mr. Lester Klashman who is Regional Coordinator and Regional Director of the New England Region of the Environmental Protection Agency.

Mr. Frank Gregg will represent the New England River Basins Commission.

And my name is Murray Stein. I am from headquarters of the Environmental Protection Agency in Washington, D. C., and the representative of Administrator Ruckelshaus.

The parties to this conference are the official State and interstate water pollution control agencies and the Environmental Protection Agency. Participation in this conference will be open to representatives and invitees of these agencies and such persons as inform me that they wish to present statements. However, only the representatives of the official agencies constitute the conferees.

Now a word about the procedures governing the conduct of the conference. The conferees will be called upon to make statements. The conferees, in addition, may call upon participants whom they have invited to the conference to make statements. In addition, we shall call on other interested individuals who wish to present statements.

At the conclusion of each statement, the conferees will be given an opportunity to comment or ask questions, and I may ask a question or two. This procedure has proven effective in the past in reaching equitable solutions.

In order to get the conference concluded within a reasonable time, we just cannot entertain comments or questions from the floor. However, you may be assured that everyone will have an opportunity to be heard fully. Please save your comments and questions, and you will be given an opportunity to make these points when your turn comes to speak.

At the end of all the statements, we shall have a discussion among the conferees and try to arrive at a basis of agreement on the facts of the situation. Then we shall attempt to summarize the conference, giving the conferees, of course, the right to amend or modify the summary.

Under the Federal law, the Administrator of Environmental Protection Agency is required at the conclusion of the conference to prepare a summary of it which will be sent to the conferees. The summary, according to law, must include the following points:

1. Occurrence of pollution of interstate waters subject to abatement under the Federal act;

2. Adequacy of measures taken toward abatement of pollution; and

3. Nature of delays, if any, being encountered in abating the pollution.

The Administrator is also required to make recommendations for remedial action if such recommendations are indicated.

A record and verbatim transcript of the conference is being made by Mr. Joe McLaughlin. This is being made for the purpose of aiding us in preparing a summary and also for providing a complete record of what is said here. It usually takes about 3 or 4 months for the transcript to come out in printed form. If you wish a record or a part of it beforehand, you can check with Mr. McLaughlin, who is an independent contractor, and make your own arrangements with him.

If you do that, of course, you can have the whole or any part of the transcript beforehand. But we will not be able to make this available before 3 or 4 months.

I should indicate that we do not print in color. So take that into account in any chart you may present. These will be reproduced in black and white. Try not to refer to color if you use graphic aids in your presentation, as they may be meaningless when someone tries to read the transcript.

We shall make copies of the summary and transcript available to the official State and interstate water pollution control agencies. We have generally found that for the purpose of maintaining relationships within the States the people who wish summaries and transcripts should request them through their State agency rather than come directly to the Federal Government. The reason for this is that, when the conference has been concluded, we would prefer people who are interested in the problem to follow the normal relations in dealing with the State agencies rather than the Federal Government. This has worked successfully in the past. And we will be most happy to make this material available for distribution.

Opening Statement - Murray Stein

I would suggest that all speakers and participants other than the conferees making statements come to the lectern and identify themselves for the purposes of the record.

The way we have generally worked the conference is that we have allowed all the States and interstate agencies to manage their own time. In other words, we will call upon the States and then the interstate agencies, and any constituents of these States will be called by them.

Thus, if you feel you want to make a statement or have any particular request as to the time you should be put on the agenda, please get in touch with your State representatives.

Under the law, if you are not happy with that, you can always come to the chairman. I should indicate that I have worked with this entire panel I would say for almost a career. We are not strangers to each other. I know the representatives of both States here, Connecticut and New York, for a very long time. They are both consummate professionals in their field and very highly respected, and I'm sure we should have no problem with them.

I have a statement here for the record. I guess if you're around long enough everyone gets a chance to be a boss once in a while. This is a statement from a former boss of mine. I would like to put it in the record. This is a statement of Senator Abraham Ribicoff. He just wants this statement submitted to the record of the conference.

As many of you know, Senator Ribicoff used to be Secretary of Health, Education, and Welfare and was very active and interested in this field. He has that active interest to this day. We are very happy to have this statement from Senator Ribicoff put in the record.

STATEMENT OF

HONORABLE ABRAHAM RIBICOFF

UNITED STATES SENATE, WASHINGTON, D. C.

The water pollution control conference beginning today can be an important step in controlling and ultimately eliminating pollution in Long Island Sound.

The sound occupies a unique place in American life. Its protected waters provide a harbor for sailors and a harvest for fishermen. It is the home for innumerable species of fin and shell fish and a way station for migrating birds. Above all, the sound plays a central role in the lives of the 11 million citizens of three States -- Rhode Island, Connecticut, and New York -- who live within 15 miles of the shore.

Ironically, the very uniqueness of the sound has contributed to its deterioration. Because of the sound's proximity to urban centers, real estate and commercial developers have hacked away at the land. Because the sound contains many important harbors, it is crisscrossed with tankers and freighters which have carelessly dumped their wastes into the once clean waters. Because three States share jurisdiction of the sound, there has been little unified concern with its future.

For years, no government, State or Federal, recognized the pollution crisis of Long Island Sound or took steps to prevent it. Even now that the problem is being recognized, intergovernmental rivalry has stymied serious attempts to cope with the deteriorating situation.

The problems facing the sound cannot be separated into separate categories. Water pollution, land development, and transportation policies, for example, are inextricably linked together. The solution of each individual problem depends upon the solution for the others.

If we are to reverse the present trend and revitalize the sound, we must have the active and cooperative participation and support of all concerned State and Federal agencies.

To accomplish this goal, I introduced two years ago a bill authorizing a regional study of the future of Long Island Sound. We held three days of hearings last summer in Connecticut and New York which documented the need for a thorough analysis of the sound's problems, and the New England River Basins Commission (NERBC) was chosen to undertake the investigation.

The Commission has begun its initial planning, and I am pleased that it has been included in this conference. Lines of communication must be opened, and this first multi-state enforcement conference was the proper occasion to begin this new spirit of cooperation.

The New England River Basins Commission will be calling on all the relevant government agencies as well as local citizens for help in formulating a comprehensive plan for development of the sound. This will enable each government agency to make the most effective use of their limited resources.

The Commission will need more than our cooperation, however. It will need adequate funds to do the job. The Commission has informed me it will need $2.9 million over the next three years to conduct a truly effective study of the sound's problems, with $1.5 million needed this year. All of us concerned with the future of Long Island Sound must work to see that this money is provided.

The present conference is scheduled for only two days. We found last summer that we were only able to scratch the surface of this problem in three days, and I hope this hearing will only signal the beginning of our efforts to end pollution of the sound. This once beautiful body of water has not yet reached the point of no return, but it is seriously close to it. We along the sound can no longer afford the luxury of jurisdictional disputes or political squabbles. To delay any longer will be an abdication of our responsibilities to the present residents of the sound area and the generations to come.

- - -

MR. STEIN: We also have a representative of Congressman Wolff here, Congressman Lester L. Wolff. Will Henry Levine come up and read his statement?

Mr. Levine.

STATEMENT OF

HONORABLE LESTER L. WOLFF

U. S. HOUSE OF REPRESENTATIVES

WASHINGTON, D. C.

(READ BY HENRY LEVINE)

MR. LEVINE: Thank you, Mr. Stein.

My name is Henry Levine. I am the Research and Projects Coordinator for Congressman Lester Wolff. The Congressman, whose interest in the preservation of Long Island Sound has been extensive and longstanding, regrets that he cannot be present today himself. He never gets to all the things he would like to go to. However, I would like to take this opportunity to make a brief statement on his behalf, as follows:

I am highly gratified by this conference, which indicates a welcome Federal interest in the sound. I would hope that it will be a major step toward cleaning up the sound, complementing the planning study being done by the New England River Basins Commission.

I would further hope that this conference will result in not only talk but also in affirmative action. It must not slow the progress of the New England River Basins Commission study, and it will not give us the single effective body needed for future control of the sound. But it can be a vital step, and I am pleased that such a step is being taken.

During the past week I have written to Environmental Protection Agency Administrator William D. Ruckelshaus urging that the Federal Government ban powerplants from discharging heated waters into Long Island Sound. Thermal discharges could be controlled by recycling the heated waters and using wholly contained cooling towers as Ruckelshaus has suggested for Lake Michigan.

In view of our lack of information on the precise extent of damage which may be caused by thermal discharges, and in view of the possibility that thermal discharges may accelerate the harm caused by other pollutants, I feel it would be wise to preclude any additional thermal discharges into the sound at this time. Long Island Sound is already deteriorating at an alarming rate, and we should take every available measure to prevent its further deterioration.

With regard to the Environmental Protection Agency report issues as the basis for this conference, I feel that while this is certainly a good beginning, the agency appears to have missed much of the pollution which flows into the western end of the sound from New York City. Since there are many tidal studies which show that water in the sound flows from west to east, it will be necessary for the Environmental Protection Agency to look harder and longer at the pollution created in the extreme western end of the sound and the upper East River.

I note with some concern that while half of the shoreline of Long Island Sound is part of New York State, and as such under the jurisdiction of Region II of EPA, the administrator of that region is not listed as one of the conferees. It would be unfortunate if the fact that most of the heavy pollution in the sound originates on the Connecticut shore were to obscure the real problems of pollution from New York City, thermal discharges, sewer effluent, and oil terminal leaks, among others, which materially harm the economic, recreational, and ecological value of Long Island Sound.

I thank you for this opportunity to talk, and I wish you much good luck.

MR. STEIN: Thank you, Mr. Levine.

I think we should point out for the record that the Federal conferees just have one conferee, Mr. Klashman, but the Regional Director for the New York Region and New

Jersey, Mr. Gerald Hansler, is in the room. He is following these procedures very closely. He has long experience in the enforcement operations of the Water Pollution Control Act. I am sure that on a day-to-day basis he will be working with us, and we will be working with him, on this problem.

At this point I would like to call on Mr. Dwight Metzler before we go into the Federal presentation.

MR. METZLER: Thank you very much, Chairman Stein.

Environmental activities in New York State have recently been consolidated in a new Department of Environmental Conservation, and here to make an opening statement for the department is Commissioner Henry L. Diamond.

STATEMENT OF
HENRY L. DIAMOND
COMMISSIONER, NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

MR. DIAMOND: Chairman Stein, my friends on the panel, conferees, New York State welcomes the calling of this conference. We are always pleased when our Federal friends and our sister States are concerned with our environmental problems. We welcome you here and look forward to working with you on them.

The preconference report lists 27 discharge sources in New York State. We have studied them in some detail. My associates, Gene Seebald and Jack Harrison, of the department, will report in detail on those sources and also on the New York program in general in some detail, as I understand is customary in these conferences.

However, in my brief remarks here I would like to bring to the attention of the conference some emerging problems that I hope will be considered that may be a little broader than the sound but really are going to determine, in my view, the future of the sound.

First, I think, enforcement. New York State is committed to a vigilant enforcement program. We believe that industrial and municipal polluters have got to be on a realistic, tough schedule, and we hope this conference will continue that tradition.

We are now carrying out a review of every outstanding commissioner's order to make sure that, indeed, all the schedules are tough and realistic.

I think that the Federal Government and the States have got to integrate their enforcement programs more closely. This will be particularly important as the new effluent permit program comes into operation. At present the Federal enforcement program is divided among several entities of the Federal Government. And seemingly without full consultation among themselves, not to mention with the

States, they are proceeding apace.

There has been, frankly, a degree of environmental "oneupmanship" involved here, and I think that we need more cooperation and less of this "oneupmanship."

The purpose of the entire water quality effort is to clean up the waterways, not to establish courtroom box scores or a line count in the newspapers.

We in New York are now beginning to work with the Environmental Protection Administration attorneys to allocate some of the workload. There are plenty of polluters for all. Our plan is that they take some of the "bad guys" and we'll take the rest, rather than everyone going after everyone else or everyone going after those who produce the greatest media coverage.

So I believe this is important to the overall enforcement program and enforcement on the sound, and we look forward to working with our Federal friends on it.

Secondly, one cannot talk about water quality without talking about money. I know Chairman Stein hears this wherever he goes, but I have got to say it for the record here. We cannot clean up Long Island Sound or any part of the waters of this country without full financing.

We in New York State have been prefinancing the Federal share of the water quality program to the tune of almost a half a billion dollars in State money and almost that much in local money.

Now, the Long Island Sound area actually, as set forth in the preconference report, has fared rather well in Federal money. The average is about 25 percent. Across the State in New York, however, the average is about 7 percent. And we have made a judgment in New York to put more of the Federal money into some of the Long Island projects. In other areas the Federal share is only 1 percent.

Of course, the authorization level is 55 percent. And we are pleased that the President has recommended -- and some of the congressional leaders have been urging -- a far higher level of Federal appropriation. I believe that it is essential that this money be authorized, appropriated, and distributed to the States.

We can hold enforcement conferences until we are blue in the face. Unless the Federal Government lives up to its share of the antipollution partnership, we are not going to get the water clean. Money is the key; there is no way around it.

The third point, boats. Pleasure and commercial ships are important on Long Island Sound. On any weekday from April to September anyone can see the sound covered with sails. This is good. But people pollute the water.

We in New York have passed some very stringent boating regulations. Quite frankly, this was a difficult and hard-won victory on which we have taken a lot of heat and continue to take it. All or part of our ability or our authority to regulate pleasurecraft will probably be preempted by the Federal standards. We urge that this conference consider making the Federal standards just as strong as New York's so we do not have a denegration of this hard-won victory. And I hope that will be a major part of this conference.

A fourth point is the thermal pollution question. I think one of the great threats to future quality of the sound is the thermal pollution problem. We are approaching it I think on an ad hoc, piecemeal basis.

We in New York have thermal standards. We think they are good. We are applying them vigorously in the one case before us. But we are not looking ahead to the future of the sound.

There may be as many as a dozen electric generating plants scheduled for the sound, maybe more, to use the sound water. Maybe a ban is needed. Our present statistics don't show us that. Maybe it is.

But I think this conference has to consider how we allocate the cooling resources of the sound, starting from a ban or some reasonable allocation for the long term.

Again, the decisions on thermal pollution and powerplant siting to too far great an extent are being made on the basis of litigation and on the basis of press releases rather than on the basis of sound judgment.

We think we environmentalists and the power people have abrogated our responsibility to the lawyers and public relations people, and this doesn't make for good power or good environment. I suggest we have a long-term planning effort on the environment.

Another point which I hope this conference will consider is the problem of stormwater separation. Most of the effluent that flows into the sound comes from combined sewers. It is particularly true in New York City, where immense quantities of sewage and stormwater flow into the sound.

We are just making a beginning on controlling this problem. It is a huge one. The financial ramifications are absolutely enormous. I think we have got to have better ways of treating it. Our technology has got to be better.

I hope we get some demonstration grants and a new Federal program, and we will probably have to have some new State efforts to clean this up. If we are ever going to have a clean sound, we have got to find better ways of separating the storage water from the sewage water. There is no way around that.

The sixth and last item I would like to mention, that I think is a great potential for Long Island and particularly for eastern Long Island, is ground water recharge. What is now a problem in the sound, sewage effluent, can be an opportunity to restore the lowered aquifers of Long Island. We in New York are working on this problem. We have had a cooperative agreement with the Federal Government. I think we are getting there. But I hope this conference again will look into the possibilities of treating water in areas where it is feasible to such levels that it can be recharged in the aquifers so we get a plus rather than minus out of our sewage effluent.

In closing, let me say that I appreciate very much the opportunity to bring these matters to the attention of the conference. They may not be in the narrow sense what conferences usually focus on. And we are going to focus on specific enforcement in later statements. But I believe these kinds of basic decisions on enforcement and financing, on thermal pollution, on ground water recharge, and on stormwater separation are what is going to get the final goal of this conference -- clean water in the sound. I hope you can give us some pushes on it.

Thank you very much.

MR. STEIN: Thank you, Mr. Diamond.

Are there any comments or questions?

(No response.)

Again, I would like to just say one thing for the record, although you may have heard this before. When we talk about Federal or State financing, who is the Federal Government? It's just you people in the States. I think we all know in checking the Constitution where the money comes from. That is the Congress.

I just made a rough estimate. I think there are 535 Senators and Representatives. If we take Connecticut and New York, we probably have 50 of the 535, which for 2 contiguous States is a pretty good average, I think, pretty near the top.

I don't think in this question of money that one party can point to the other party. We're all together. We're not a foreign government. You're dealing with your Government in Washington.

MR. DIAMOND: I certainly agree with you. We in New York who send a dollar to Washington and get back 7 cents sometimes think we are sort of low on the "foreign aid" totem-pole, but I certainly agree it's the same dollar.

MR. STEIN: They say these days we only get 52-cent dollars when they come in.

We will now call on Mr. Klashman for the Federal presentation.

MR. KLASHMAN: I should like to first call on Mr. Albert Bromberg, who is Chief of the Operations Branch of the Water Quality Office, Region II, Environmental Protection Agency, located at Edison, New Jersey.

The effort which went into this conference was carried on by both Regions I and II of the Environmental Protection Agency, and Mr. Bromberg, who is with Region II, will give our statement.

STATEMENT OF
ALBERT W. BROMBERG
CHIEF, OPERATIONS BRANCH
WATER QUALITY OFFICE, REGION II
ENVIRONMENTAL PROTECTION AGENCY
EDISON, NEW JERSEY

MR. BROMBERG: Mr. Chairman, conferees, my name is Albert Bromberg. I am the Chief of the Operations Branch of the Environmental Protection Agency's Water Quality Office in Edison, New Jersey.

I would like to present our report on the water quality of Long Island Sound. I would like to read portions

ERRATA SHEET

for

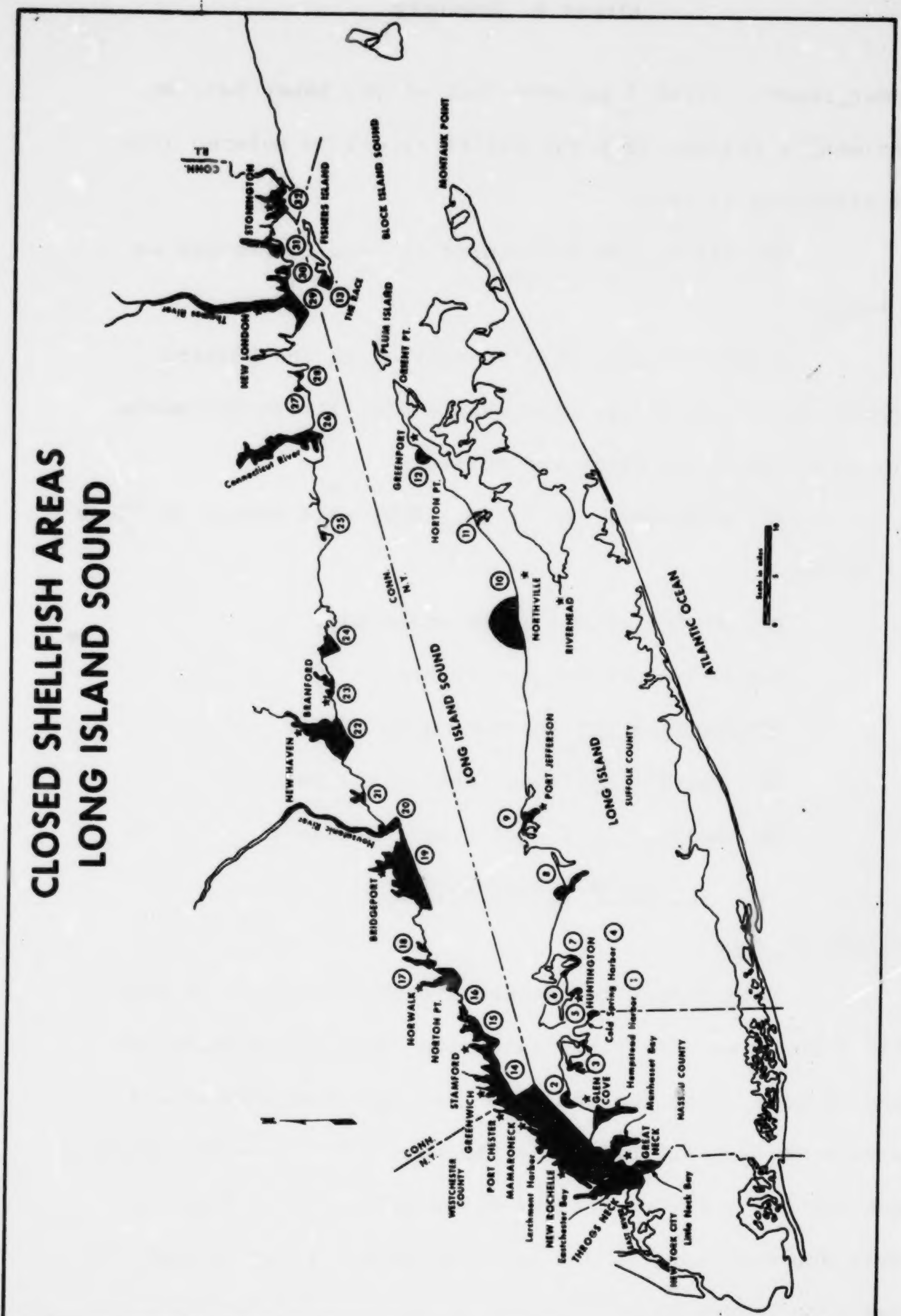
Report on the Water Quality of Long Island Sound

March, 1971

Page, Figure or Section Number	Correction
Section II, Page 10	Closed Shellfish Areas listed are numbered as follows: In New York 1. Hempstead Harbor 2. Vicinity of Matinicock Harbor 3. Oyster Bay Harbor (part) 4. Cold Spring Harbor (part) 5. Huntington Harbor (part) 6. Centerport Harbor (part) 7. Northport Harbor 8. Nissequoque River 9. Port Jefferson Harbor (part) 10. Offshore area of Northville (oil unloading facility) 11. Vicinity of Mattituck Inlet 12. Vicinity of Inlet Point (Greenport sewer outfall) 13. Vicinity of west end of Fishers Island In Connecticut 14. Greenwich 15. Darien - Stamford 16. Darien - Norwalk 17. Norwalk 18. Westport - Fairfield 19. Bridgeport 20. Stratford - Milford (Housatonic River)

Page, Figure or Section Number	Correction
	21. Milford
	22. New Haven
	23. East Haven - Branford
	24. Thimbles Islands
	25. Madison - Clinton
	26. Old Saybrook - Old Lyme (Connecticut River)
	27. Four Mile River
	28. Bride Brook
	29. Groton - New London (Thames River)
	30. Groton - Mumford Cove
	31. Groton - Mystic River
	32. Stonington
Figure 3	Replace Figure 3 with the attached new Figure 3 showing numbered location of closed shellfish areas.
Section III, Page 13	Second paragraph, revise fifth sentence to read: "Of the 60 systems listed, five in Connecticut serving less than one percent of the sewered population are individual septic tank communities; 32 (12 in New York and 21 in Connecticut) serving 73 percent provide primary treatment; and 23 (10 in New York and 13 in Connecticut) serving 27 percent provide secondary treatment".
Section III, Page 16	Second paragraph, sixth line - replace "Port Jefferson" with "Northport".
Section IV, Table 6	Seventh entry in this Table, change "Manyasset" to "Manhasset".
Section V, Page 32	Third paragraph - replace last sentence with "The municipal plants that have been identified total 38, of which six are on schedule; 24 are behind schedule; one has a pending completion date (with no interim date) and six presently provide adequate treatment with no established schedule".

Page, Figure or Section Number	Correction
Appendix B, Table B-1	Change entry No. 30, "Fairfield" as follows: a) Under "Degree of Treatment", replace "Primary" with "Secondary". b) Under "Federally Approved Implementation Schedule" delete all dates of the schedule and code regarding status.
Appendix B, Table B-1	Change footnotes at the end of page 3 of Table B-1 as follows: a) Under the column "Status", a "1" indicates the step has been completed, a blank indicates it has not been completed. Status of Compliance is as of March 15, 1971 for Connecticut sources and October 30, 1970 for New York sources. b) An asterisk "*" at the right margin of the Implementation Schedule indicates it is a State Schedule with no Federal Schedule established.



CLOSED SHELLFISH AREAS
LONG ISLAND SOUND

BLOCK ISLAND SOUND
MONTAUK POINT
FISHERS ISLAND
STONINGTON
CONN.
R.I.
NEW LONDON
Thames River
THE RACE
PLUM ISLAND
ORIENT PT.
GREENPORT
NORTON PT.
Connecticut River
CONN.
N.Y.
LONG ISLAND SOUND
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
Scale in miles
0
5
10
BRANFORD
NEW HAVEN
Housatonic River
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
BRIDGEPORT
NORWALK
NORTON PT.
HUNTINGTON
Cold Spring Harbor
Hempstead Harbor
Manhasset Bay
NASSAU COUNTY
GLEN COVE
STAMFORD
GREENWICH
PORT CHESTER
MAMARONECK
CONN.
N.Y.
WESTCHESTER COUNTY
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
GREAT NECK
NEW YORK CITY
Little Neck Bay
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of our report, which I am sure most of you have, but, Mr. Chairman, I request that the entire report be entered into the record as if read.

MR. STEIN: We will enter it into the record as if read.

I hate to give this admonition on the Federal report, but I notice you have charts with little red marks. They will appear in black and white.

MR. BROMBERG: Be it so. They will appear in black and white.

MR. STEIN: There is no other way.

Let me go off the record here.

(Discussion off the record.)

MR. STEIN: Let's go back on the record.

Mr. Bromberg. I will start on page 1.

I - BASIN CHARACTERISTICS

Outline of Area

This report is concerned with the waters of Long Island Sound and its tidal estuaries, bays and harbors to head of tide along the shores of New York and Connecticut between Throgs Neck Bridge in the west and a line extending from the New York-Connecticut-Rhode Island State line to north shore of Long Island Sound at Orient Point in the east (see Figure 1).

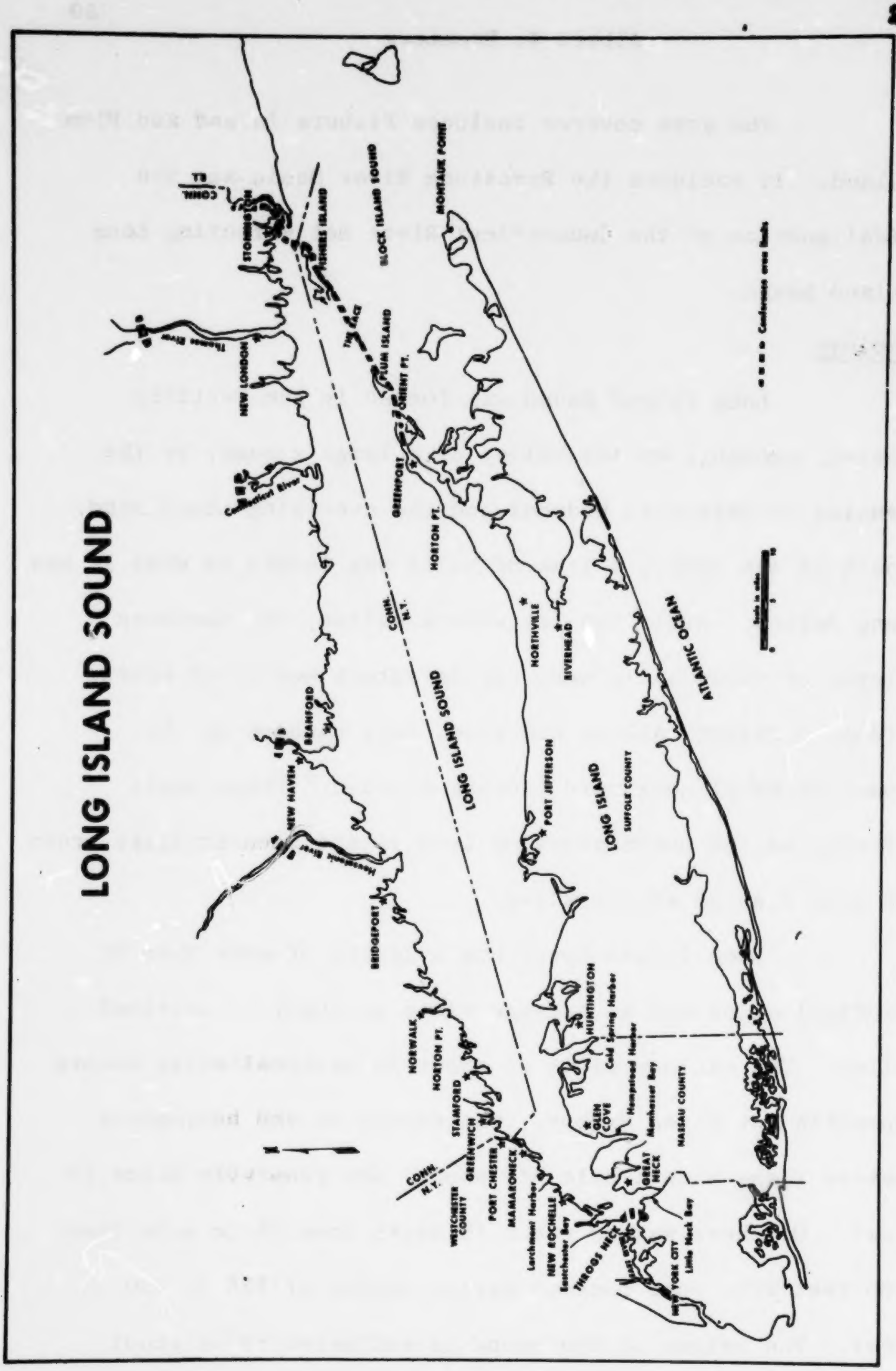

LONG ISLAND SOUND
Housatonic River
Connecticut River
Thames River
BRIDGEPORT
NEW HAVEN
BRANFORD
NEW LONDON
STONINGTON
CONN.
R.I.
FISHERS ISLAND
THE RACE
PLUM ISLAND
ORIENT PT.
GREENPORT
NORTON PT.
BLOCK ISLAND SOUND
MONTAUK POINT
CONN.
N.Y.
LONG ISLAND SOUND
NORTHVILLE
RIVERHEAD
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
ATLANTIC OCEAN
Scale in miles
Conference area limits
NORWALK
NORTON PT.
STAMFORD
GREENWICH
PORT CHESTER
MAMARONECK
WESTCHESTER COUNTY
CONN.
N.Y.
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
NEW YORK CITY
Little Neck Bay
GREAT NECK
Manhasset Bay
GLEN COVE
Hempstead Harbor
NASSAU COUNTY
Cold Spring Harbor
HUNTINGTON

Figure 1

The area covered includes Fishers Island and Plum Island. It excludes the Pawcatuck River Basin and the tidal portion of the Connecticut River not affecting Long Island Sound.

Geology

Long Island Sound was formed in the Tertiary period, probably as the valley of a large stream, by the erosion of weathered bedrock and the overlying Lloyd sand. South of the sound, a line of hills was formed on what is now Long Island. After the ice sheets melted, the northern slopes of these hills were carved into a series of short, steep, straight valleys and wide, deep harbors by the numerous small northward flowing streams. These small streams on the north shore of Long Island have drainage areas of less than 30 square miles.

Long Island Sound has a length of more than 90 nautical miles and an average width of about 10 nautical miles. The maximum width of about 20 nautical miles occurs opposite New Haven Harbor. The depths of the near-shore waters (less than a mile off shore) are generally below 25 feet. Offshore waters range in depth from 25 to more than 100 feet with some pockets having depths of 125 to 150 feet. The volume of the sound is estimated to be about 2,200 billion cubic feet (63 billion cubic meters).

Long Island Sound has an eastern entrance to the Atlantic Ocean through Block Island Sound and The Race. The Race is that stretch of water between Fishers Island and Plum Island. The western entrance to the sound is by way of the East River at Throgs Neck.

Climate

The average annual air temperature of Long Island Sound is about 51 degrees F. The average monthly air temperature ranges from the middle seventies in the summer to the middle twenties in winter. Extreme temperatures range from about 100 degrees F. to less than 0.

Precipitation is evenly distributed throughout the year with the monthly average at about 3.7 inches. The annual precipitation rate varies with location around the sound, but generally ranges from 40 to 46 inches per year. The annual snowfall on the area is about 30 to 35 inches. During the winter months, precipitation results from the "prevailing westerlies." The greatest precipitation generally occurs during August when tropical storms reach the area. June and July offer the lowest monthly average precipitation.

Hydrology

Freshwater Inflow

Three major drainage basins provide the sound with freshwater. They are, in order of importance, the Connecticut River Basin (11,265 square miles), the Housatonic River Basin (1,950 square miles), and the Thames River Basin (1,470 square miles). Smaller streams in Connecticut, on the New York mainland, and on Long Island drain an additional 1,300 square miles. Thus, the entire drainage area to the sound is about 16,000 square miles, or about 13 times the area of Long Island Sound. A summary of the average annual runoff from river basins draining to the sound is shown on Table 1.

Another source of freshwater to Long Island Sound is ground water outflow. The estimated subsurface outflow from ground water in Connecticut is estimated to be about 190 cubic feet per second (cfs) and from Long Island about 260 cfs.

Circulation of Water

Movement of water in Long Island Sound is complex. Circulation is influenced by: inflow of salty Block Island Sound water; density differences between bottom and surface waters; inflow of freshwater from streams and groundwater; and by tides, winds, and the earth's rotation. There is also inflow of water from the East River at Throgs Neck which affects the western portion of the sound near the New York metropolitan area.

TABLE 1

SUMMARY OF MAJOR SURFACE WATER RUNOFF TO LONG ISLAND SOUND

Drainage Basin	Drainage Area Square Miles	Average Annual Flow Cubic Feet Per Second
Long Island, N.Y.		
Glen Cove Creek	11	7.2
Mill Neck Creek	12	9.5
Cold Spring Brook	7	4.6
Nissequoque River	27	42.2
	57	63.5
Westchester County, N.Y.		
Hutchinson River	6	6.3
Mamaroneck River	23	29.3
	29	35.6
New York-Connecticut		
Byram River	36	10.7
Connecticut		
Connecticut River	11,265	19,100
Housatonic River	1,950	3,230
Thames River	1,470	2,420
Connecticut Coastal	1,150	2,060
	15,835	26,810
Total	15,957	26,920

Water from Block Island Sound enters Long Island Sound along the bottom through The Race. As the bottom water travels westward it is gradually mixed into the surface layer. Near New Haven, bottom water moves west at an average speed of almost 6 miles per month; at the western end the bottom transport is essentially 0.

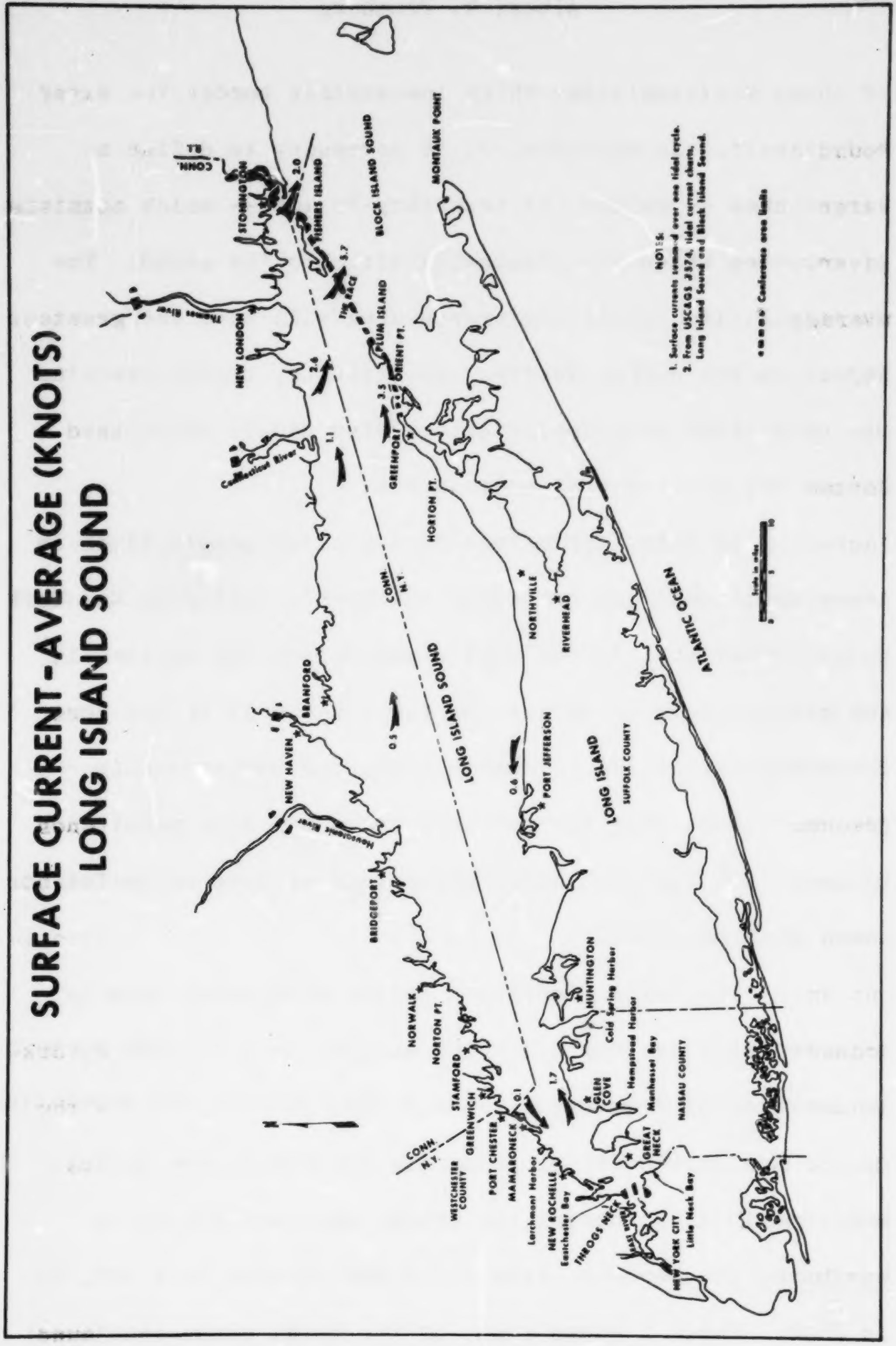
Surface transport, generally composed of mixed bottom water, and surface runoff and groundwater seepage increases from west to east. Near New Haven the surface transport flows east at a rate of almost 9 miles per month.

Tidal currents commonly average about 0.7 knots, and generally move parallel to the coast. Figure 2 shows the average surface velocities in the sound. The polluted fresher water entering the sound through Throgs Neck tends to keep to the Long Island shore. The saltier Block Island Sound water entering The Race tends to keep to the Connecticut shore. These surface currents cross the New York-Connecticut State line near Fishers Island and the New York-Connecticut State line near Port Chester Harbor. When the waters near the State lines are polluted, tidal currents carry the polluted waters from one State into another.

Population

Conference Area (Immediately Bordering the Sound)

The conference area for Long Island Sound consists



SURFACE CURRENT - AVERAGE (KNOTS)
LONG ISLAND SOUND

NOTES:
1. Surface currents summed over one tidal cycle.
2. From USC&GS 2374, tidal current charts, Long Island Sound and Block Island Sound.

▬ ▬ ▬ Conference area limits

CONN.
R.I.
STONINGTON
FISHERS ISLAND
2.0
BLOCK ISLAND SOUND
MONTAUK POINT
NEW LONDON
Thames River
THE RACE
3.7
PLUM ISLAND
ORIENT PT.
2.4
3.5
GREENPORT
Connecticut River
1.1
HORTON PT.
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
Scale in miles
BRANFORD
0.5
LONG ISLAND SOUND
NEW HAVEN
0.6
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
Housatonic River
BRIDGEPORT
HUNTINGTON
Cold Spring Harbor
Hempstead Harbor
Manhasset Bay
NASSAU COUNTY
NORWALK
NORTON PT.
STAMFORD
GREENWICH
0.1
1.7
GLEN COVE
GREAT NECK
PORT CHESTER
MAMARONECK
WESTCHESTER COUNTY
CONN.
N.Y.
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
East River
NEW YORK CITY
Little Neck Bay

Figure 2

of those municipalities which immediately border the water body itself. In addition, it is necessary to define a larger area -- called the tributary region -- which consists of counties which are reasonably close to the sound. The municipalities in the conference area will have the greatest impact on the sound, whereas the tributary region contains not only these municipalities but also others which have a lesser but still significant impact.

In 1960, approximately 2 million people lived in those municipalities bordering the sound, excluding New York City. About half of the area's population was located in Connecticut municipalities and the other half in New York State municipalities. Table 2 shows the population in the conference area for selected years and area population distribution and population percentage changes estimated for 1969, 1980 and 2010.

The total population in the conference area is expected to rise from 2,480,000 in 1969 to 4,340,000 by 2010, an increase of 75 percent. During this period, the population of the New York portion, primarily the Nassau and Suffolk municipalities bordering the sound, can increase by an estimated 100 percent, from 1,230,000 in 1969 to 2,450,000 in 2010. Table 3 shows that, of the total conference area population, the Connecticut portion was 53 percent in 1960

TABLE 2

DISTRIBUTION OF POPULATION IN CONFERENCE AREA FOR 1960, 1969, 1980 AND 2010[1]

(thousands)

	1960	1969	1980	2010	Percentage Increase 1969-1980	Percentage Increase 1980-2010	Percentage Increase 1969-2010
Connecticut Portion	1,060	1,250	1,490	1,890	19	27	51
New York Portion	930	1,230	1,460	2,450	19	68	99
AREA TOTAL	1,990	2,480	2,950	4,340	19	47	75

TABLE 3

CONFERENCE AREA POPULATION AS PERCENT OF TOTAL FOR 1960, 1969, 1980 AND 2010

	1960	1969	1980	2010
Connecticut Portion	53	50	50	44
New York Portion	47	50	50	56
AREA TOTAL	100%	100%	100%	100%

TABLE 4

TRIBUTARY (COUNTY) DISTRIBUTION OF POPULATION[1]

(thousands)

	1960	1969	1980	2010	Percentage Increase 1969-1980	Percentage Increase 1980-2010	Percentage Increase 1969-2010
Connecticut (4 counties)	1,588	1,910	2,280	2,970	19	30	55
New York (7 counties)	10,336	10,980	12,320	15,640	12	27	42
REGION TOTAL	11,924	12,890	14,600	18,610	13	27	44

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[1] Information contained in the table was derived from the U.S. Census of Population 1960, PC(1)-8A, The Demographic Projections for New York State Counties to 2020 A.D., New York State Office of Planning Coordination and the Population Survey, 1970, Long Island Lighting Co. With the exception of 1960, Connecticut population figures are based upon Environmental Protection Agency estimates.

but by 2010 it is expected to decline to 44 percent. Conversely, the New York portion is expected to increase to 56 percent during this period.

Tributary (County) Region

Any consideration of the Long Island Sound conference area should take into account the socioeconomic impact of the larger county-wide region that is tributary to the sound. Counting whole counties (7 in New York -- Kings, Queens, New York, Bronx, Westchester, Nassau, and Suffolk -- and 4 in Connecticut -- Fairfield, Middlesex, New Haven, and New London), the population in the tributary region was 11,924,353 in 1960. The estimated 1969 population was 12,890,000; the population by 2010 is estimated at 18,610,000, an increase of 44 percent (see Table 4).

In 1960, the total population for the 7 New York State counties was 10,335,839, whereas the 4 Connecticut counties totaled 1,588,514. For 2010, the New York counties' total is estimated at 15,640,000 and Connecticut's 4 counties at 2,970,000. This indicates that the New York counties' population will increase by an estimated 42 percent between 1969 and 2010, compared to the Connecticut counties which will increase by 55 percent.

Comparison of Table 2 and Table 4 discloses that the population in the conference area is expected to increase by 75 percent between 1969 and 2010, while the population throughout the tributary region for the same period will increase more slowly -- by 44 percent.

Population growth in the conference area and the larger tributary region will result in an increase in waste load to the waterways; the waste load per person will also rise due to the increased domestic use of such items as garbage disposal units.

The expected increase in leisure time during the coming decades will place greater demands on recreational facilities and the use of recreational equipment such as boats. Long Island Sound will be called upon to serve more and more people. At the same time, the divergent demands of recreation and other environmental needs versus waste disposal, power generation, and commercial uses are competing with each other.

Economy

The discussion of the economy in the conference area is based only upon the 7 counties directly adjoining Long Island Sound -- namely, Westchester, Nassau and Suffolk Counties on the New York side and Fairfield, Middlesex, New Haven, and New London Counties on the Connecticut side.

For these 7 counties slightly more than 91,000 business establishments (all Standard Industrial

Classifications-SIC) were reported in 1968. Table 5 shows that the New York counties accounted for approximately 57,600 or more than half of the total number.

Roughly 8,200 manufacturing establishments were located in this limited region, and the majority, or 57 percent, were in New York. Included among these establishments are such large water-using or potential water-polluting categories as food, textiles, paper, chemicals, petroleum, and primary metals.

Although the total number of manufacturing establishments in the area remained almost constant between 1964 and 1968, it is expected, according to the Office of Business Economics employment projections, that manufacturing in the conference area will increase by 30 percent in the next 4 decades.

Considering employment projections in the 6 major water-oriented industries cited above, the importance of the food and chemical industries in the area is expected to increase, whereas the textile, paper, and primary metals industries are expected to decline. These industrial employment changes will come about by means of technological advances or the use of automated equipment. It is not possible at this time to obtain employment data for the petroleum industry, but the anticipated increase of

TABLE 5

1968 DISTRIBUTION OF BUSINESS ESTABLISHMENTS IN LONG ISLAND REGION BY STATE, COUNTY AND MAJOR BUSINESS CLASSIFICATION[1]

	Total No. of Establishments[2]	Agricultural Services Mining	Contract Construction	Manufacturing	Transportation	Wholesale	Retail	Finance, Insurance, Real Estate	Services (Hotels, Repairs, etc.)
New York									
Nassau	26,483	425	2,558	2,187	800	2,388	7,662	2,655	7,808
Suffolk	13,440	238	1,832	1,169	512	771	4,470	797	3,651
Westchester	17,643	297	1,807	1,265	502	1,282	5,033	2,206	5,251
SUB-TOTAL	57,566	960	6,197	4,621	1,814	4,441	17,165	5,658	16,710
% of Sub-Total	100	1.7	10.8	8.0	3.2	7.7	29.8	9.9	29.0
Connecticut									
Fairfield	14,771	204	1,730	1,589	405	944	4,212	1,171	4,516
Middlesex	1,943	29	279	243	52	94	623	116	507
New Haven	13,519	96	1,287	1,506	396	1,034	3,952	1,199	4,049
New London	3,291	53	353	224	107	200	1,183	228	943
SUB-TOTAL	33,524	382	3,649	3,562	960	2,272	9,970	2,714	10,015
% of Sub-Total	100	1.1	10.9	10.6	2.9	6.8	29.7	8.1	29.9
REGION TOTAL	91,090	1,342	9,846	8,183	2,774	6,713	27,135	8,372	26,725
% of Total	100	1.5	10.8	9.0	3.0	7.4	29.8	9.2	29.3

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[1] County Business Patterns, 1968, U.S. Dept. of Commerce, Bureau of the Census.

[2] Unclassified Establishments excluded.

petroleum shipping in the sound indicates that this industry will be an important factor in the future economic development of the area.

Extensive land requirements for residential, industrial, and commercial development will decrease the amount of agricultural land usage and agricultural employment in the area, even though the value of the agricultural output may increase. The decline in the agricultural industry may be offset by the growth of other industries, such as oyster shellfishing and services.

At present, the shellfish and fin fish industries significantly contribute to the economic importance of the conference area. With improved water quality, the economic value of these two industries could be greatly enhanced. Detailed information concerning these industries will be discussed in a later section.

Some indication of the overall economic value of the region can be measured in terms of the dollar value of the region's physical output. In 1963, the region accounted for $4.4 billion worth of economic production (value added by manufacturers).

II - WATER USES

Industrial and Municipal Water Supply

The waters of Long Island Sound with salinities of about 20 parts per thousand are unsuitable as a source of municipal water supply.

Few industrial plants withdraw sound water for in-plant process use because of high salinities. Seventeen fossil fuel power generating stations and many industrial plants located around the periphery of the sound use sound waters for cooling purposes. An estimated 2,100 mgd of water withdrawn from the sound or its harbors were used for cooling in conjunction with power generation during 1967. To meet projected increases in local power demands, several nuclear and conventional steam electric power plants have been proposed. Cooling water withdrawals from Long Island Sound for generating this power are estimated at 3,300 mgd by the end of 1970 and 17,400 mgd by 1990.

The installed and planned power capacity of conventional steam and nuclear power stations using cooling water from the sound are summarized below. An estimate of the amount of cooling water used is also included. Appendix A, Tables A-1 and A-2 list the conventional steam electric powerplants and the nuclear power stations used to develop the summary table. Appendix Figure A-1 shows the location of the power stations.

Since more power production will be needed to sustain the projected population and industrial growths, detailed studies should include the effects of heated effluent on the ecology of Long Island Sound.

SUMMARY OF CONVENTIONAL STEAM AND NUCLEAR ELECTRIC POWER PLANTS ON LONG ISLAND SOUND

	Installed Capacity	Planned Capacity*	
	1967	1970	1990
Conventional Steam Electric Power Plants			
Installed Capacity (megawatts)	2,930	4,520	5,370
Estimated Cooling Water Use (mgd)	2,100	3,300	3,900
Nuclear Electric Power Plants			
Installed Capacity (megawatts)			10,230
Estimated Cooling Water Use (mgd)			13,500
Total			
Installed Capacity (megawatts)	2,930	4,520	15,600
Estimated Cooling Water Use (mgd)	2,100	3,300	17,400

*Recent controversies regarding thermal pollution have delayed construction of many planned stations.

MR. KLASHMAN: Mr. Bromberg, I wonder if you might delay the remainder of your statement just for a moment. You have finished reading on page 6?

MR. BROMBERG: Right. I can start on page 7.

MR. KLASHMAN: If you can just delay, then we will recall you.

MR. STEIN: Thank you. The reason for the delay is we are very honored to have a man who was very instrumental in the calling of this conference and in the calling of our attention to the problems constantly in Washington. We would like to call on Congressman Ogden Reid.

Congressman Reid.

STATEMENT OF

HONORABLE OGDEN R. REID

U. S. HOUSE OF REPRESENTATIVES, WASHINGTON, D. C.

CONGRESSMAN REID: Mr. Chairman Murray Stein, I'm very happy to be here today, and I think that this conference is particularly fortunate to have your leadership as chairman.

Murray Stein is one of those who have worked particularly hard in Washington over the years to really make a difference in what the Federal Government does with regard to the environment. He is fair, he is thoughtful, he is creative, and I am sure he will work out a plan with the others represented today that will represent major steps forward for the Long Island area.

I understand there are representatives of the New York Department of Environmental Conservation -- is Henry Diamond here? I think he is coming -- and the Connecticut Water Resources Commission. The New England Interstate Water Pollution Control Commission I think was due to be here today.

At any rate, let me say first that I am delighted that this Long Island Sound enforcement conference to halt pollution is at last a reality. It started in part back in 1965 with a memorandum to Secretary Udall and was given subsequent impetus by Russ Train, now in the White House, David Dominick, and Bill Ruckelshaus, and I could not be happier that this has occurred.

The plain fact of the matter is that I don't think we'll make progress unless the two States of New York and Connecticut work together and, further, the Federal Government steps up to its responsibilities as well. And the only mechanism really for putting the facts together, working out joint abatement schedules, and backing that up with necessary fines, if that is required, is a Federal enforcement conference.

We are meeting today, I submit, ladies and gentlemen, none too soon. The pollution of Long Island Sound has reached serious -- some would say alarming -- proportions.

Statistics cited in the report on the water quality of Long Island Sound, copies of which I am sure you have, are very clear. This is the second report issued by the Federal Government. And it notes at least 15 areas of the sound are violating basic standards and are polluting the area.

I would call your attention to Bill Ruckelshaus' statement in the press release on this conference in which he said, "Portions of Long Island Sound are already severely degraded by municipal and industrial wastes. If we do not take steps now to reverse this situation, incalculable damage could be done to this vital water resource. The area of New York City, Westchester, Nassau and Suffolk Counties in New York and Connecticut supports a population of 11 million people and is still growing rapidly."

When I first looked at some of these figures, there were some that told me there had been a tenfold increase in pollution in a relatively few years. Others were concerned that we were headed down the route of Lake Erie. Without trying to evaluate precisely where we are, there are some specifics I believe that this conference must and can deal with.

First, there is a total of 60 municipal and institutional sewage systems, 22 in New York and 38 in Connecticut, that dump 170 mgd of wastewater into Long Island Sound and its embayments. There are 16 combined sewers in Long Island Sound which dump serious quantities of untreated water and wastes into the sound after rains.

We are well aware that there are significant thermal pollution dangers as well. We have one atomic plant at the moment on the Connecticut River, as we're all familiar, and there are possibilities of an additional five or six being built in the sound area.

I happen to believe that no power facility should be built unless there is conclusive evidence, after thoughtful study and siting, that there will be no environmental danger or hardship.

Additionally, as the report points out, there are 137 industrial sources of wastewater discharge into the embayments and estuaries of the sound, 132 in Connecticut and five in New York, four of which are in Westchester County.

There are 16 Federal installations, including 11 lighthouses, that include, in addition to the lighthouses, a U. S. Air Force facility and a U. S. Navy facility, discharging 2 mgd of wastewater and 5.3 mgd of cooling water into the sound, its embayments and estuaries.

Substantial pollution, I submit, is also created in the sound by 240 boat marinas, more than 100 oil storage and unloading facilities, nine Corps of Engineers disposal areas, which in 1968 received 1.4 million cubic yards of dredged material, and there are 17 fossil fuel steam electric generating plants which use the sound and affect it for cooling purposes.

Adding all of these up, Mr. Chairman, there is a grand total of 579 identifiable sources dumping several hundred million gallons of waste per day directly or indirectly into Long Island Sound.

It is clear that we have a tremendous amount of work ahead of us. At a minimum, it seems to me we need to greatly improve our sewage treatment process. Of the 60 institutional sewage systems polluting the sound, only 22 have even secondary treatment facilities. None provides tertiary treatment.

Tertiary treatment, as well as year-round chlorination, is essential if the waters of the sound are to be restored to acceptable quality.

Now, the minute you mention tertiary treatment, hands go up in horror over the cost. But, as a practical matter, I think the Federal Government has got to step up to bat, and the States, to help pay the cost of what is required. And we'll be kidding ourselves, I submit, if we permit primary and secondary plants to operate which do not filter out either phosphates, for example, or viruses.

I would submit that year-round chlorination and consideration of tertiary plants is an appropriate matter for your agenda.

Moreover, it is my belief that the State of New York should make stricter its classes and standards for water quality. Presently, for example, New York imposes a higher standard for waters usable for commercial shellfishing than for waters usable for swimming. Yet a bather might easily ingest water while swimming. Why, then, should we give less protection to people swimming than we do to shellfish?

As you may know, there are 61,000 acres in Long Island Sound closed for shellfishing purposes now in New York and 15,000 acres in Connecticut.

So there does seem to be quite a bit to be done. We are fortunate that there is time to do it. And, in spite of the magnitude of the problem, as I mentioned earlier, Long Island Sound is not yet Lake Erie -- which, for those of you who are interested in statistics, has aged 50,000 years in the last 50. And there is no need for Long Island Sound to follow that path. But it will follow that path unless we act more vigorously.

While I have not taken a nose count as I walked in the door, Mr, Chairman, I hope that you will have present at your hearings and at this conference all of the polluters in the Long Island Sound area. I think voluntary participation and concern rather than merely just concern for public condemnation or censure should bring everyone in.

But let's be candid. The history of enforcement conferences shows that something like 50 percent come in initially, another 25 percent later, and there are apt to be something on the order of 25 percent who are recalcitrant and do not really put their shoulder to the wheel or appear.

This is something that I think every industry, every municipality should want to do and take the lead on. It shouldn't be the Federal Government really in the first instance that requires it. Any industrial company should be taking the lead in the environment today. But, unfortunately, this is not always the case.

Needless to say, failure of any polluter to cooperate would be dereliction and would justifiably earn that municipality or that company the contempt of the public.

But I hope that this conference will set new records of voluntary participation, prompt agreement on necessary abatement schedules, and progress in this regard in excess of the schedules, so that we can really get ahead of the problem.

But, finally, let me say a word about the Federal law and the statute under which you are operating today and a word about what I think the Federal Government must do to assist you and I am convinced will do.

First, the Federal Government at the moment can act only in cases of interstate pollution -- that is, when water pollution originating in one State endangers the health or commerce of persons in another State.

Second, there is no subpena power to compel the attendance of polluters at enforcement conferences and hearings on pollution control.

Third, too much time -- at least 12 months and as a practical matter often closer to two years -- is permitted for voluntary compliance before the Federal Government can act to compel polluters to abide by abatement schedules.

Fourth, no financial penalties are assessable against non-complying polluters unless the hearing process and subsequent court action take place, which is an appreciable point in the future.

In order to put real teeth into our anti-pollution laws on water, it is my intention to introduce and cosponsor legislation designed to correct these deficiencies:

1. To broaden the coverage of water quality standards and enforcement provisions to intrastate and interstate waters, including all navigable waters, groundwaters, and tributaries of such waters.

2. Empower the Administrator of the EPA to prescribe appropriate remedial action for a polluter based on information, however obtained, that the polluter was clearly violating water quality standards.

3. Shorten substantially the permissible period for voluntary compliance.

4. Provide civil penalties of up to $25,000 a day for violations of final enforcement orders.

Provision 4 would mean, for example, that a municipality which permitted effluents of an unaccepted quality to be discharged into its sewerage for a month would be subject to a fine of $750,000.

In addition, those of you from New Haven and concerned with what happened on January 21st of this year -- where 386,000 gallons of No. 2 fuel oil and kerosene were spilled by a tanker into the vicinity of New Haven Harbor -- are well aware that our law regarding oil spillage needs to be strengthened, and I have introduced legislation here which would fine any such polluter $10 per gallon. In the case of New Haven, that would be a fine of over $3 million for that particular company.

Second, we are endeavoring to change the law so that merely simple negligence would be sufficient to invoke the fine, not willful negligence. In my judgment, if an oil tanker goes out on a foggy day without a pilot on board and with the radar inoperative, this comes very close to simple negligence.

Third, as many of you know, the Federal law at the moment does not require either a tank farm or an oil tanker to assume the full charge of cleanup of whatever they may spill. I think the law should be amended so that the total cost would have to be borne by the oil company, the tank farm, or the shipping company in this case.

I'm very happy that the administration in Washington has embodied most of these concepts in draft legislation which is starting to move in the Senate and I hope will move in the House.

In a nutshell, Mr. Chairman, it seems to me the time has come to crack down hard on industrial and municipal polluters that have flouted the public interest for too many years. The principal answers, in my judgment, are prompt compliance -- and in the absence of compliance, major fines.

No municipality or private industry is going to lightly ignore the threat of a multimillion dollar fine.

The environment, in a nutshell, it seems to me, must be given priority. The reason all of you are here today is your conviction and commitment that Long Island Sound is a great natural resource, that we can restore that which has been despoiled, and that we can plan intelligently and creatively and together for the future.

I think you can set some history here at this conference that will be meaningful as a national model of two States working together, of the Federal Government stepping up to its responsibilities, which has not always been the case, to come forward with a plan that is voluntary, that is creative, and that will do the job.

I wish you the very best, and I thank you most warmly for the indulgence of the opportunity for expressing a few thoughts.

Thank you, Mr. Chairman.

MR. STEIN: Thank you, Congressman. We certainly appreciate your remarks, and I particularly am appreciative of the fact that these remarks are based on a real, thorough, factual and legislative analysis.

These are remarks from a Congressman which I think are most helpful. They are specific comments. From the point of view where I sit, every one of them has to be taken very, very seriously.

Thank you very much, Congressman Reid.

May we continue?

MR. KLASHMAN: Mr. Bromberg, will you continue?

FURTHER STATEMENT OF

ALBERT W. BROMBERG

CHIEF, OPERATIONS BRANCH

WATER QUALITY OFFICE, REGION II

ENVIRONMENTAL PROTECTION AGENCY

EDISON, NEW JERSEY

MR. BROMBERG: Mr. Chairman, we will continue the presentation on page 7.

Commercial Navigation

In 1968, there were 20 active commercial shipping ports in Long Island Sound (10 each in New York and Connecticut). The major product shipped on Long Island Sound -- 68.5 percent of total tonnage -- was petroleum and related products. The remaining major products shipped were sand and gravel (17.4 percent) and coal and coke (7.0 percent). Shipping in Long Island Sound is heavily oriented to the Connecticut ports; in 1968, 24 million tons were shipped in Connecticut ports and 12 million tons were moved in New York ports.

The importance of shipping on Long Island Sound can be appreciated by recognizing that 90 percent of Connecticut's entire fuel supply arrives by water. Petroleum products in 1968 accounted for 18.8 million tons of cargo in Connecticut ports and 6.1 million tons in New York ports. In 1969, there were 102 oil unloading facilities on the sound, with 49 in New York and 53 in Connecticut. There will be a need to expand these facilities to meet the growing demand for petroleum products anticipated in the conference area.

Commercial ferry service on Long Island Sound handles about 500,000 passengers a year and about 130,000 automobiles. Ferry service (primarily seasonal) runs between New London and Greenport, New London and Fishers Island, Greenwich and offshore islands, Bridgeport and Port Jefferson. Passenger numbers have gradually declined for both the Bridgeport and Greenwich ferries.

Passenger and cargo-handling vessels made over 270,000 trips on Long Island Sound in 1969. With the expected increases in shipping, the likelihood of accidental spillages of petroleum products and the overboard discharge of sewage rises.

Recreation

Swimming

Long Island Sound has approximately 400 miles of recreational shoreline, 76 miles of which may be categorized as beach area. Twelve public recreation areas with beaches and many private beaches associated with individual camps and homes are located on the sound's waters. More than 3.5 million visits per year are made to Long Island Sound beaches with visits being split equally between New York and Connecticut.

About 135,000 people or nearly 5-1/2 percent of the Connecticut population goes swimming on a sample Sunday afternoon, with approximately 60,000 at saltwater beaches. This number is greater than the Bureau of Outdoor Recreation "standard of supply" (total fresh and salt water) of 3 percent of the population (87,900). Connecticut State Parks have a capacity for 50,000 saltwater swimmers per day. Peak-day demand is estimated as high as 100,000 visits, 25,000 of which are from New York State. The number of swimmers in Connecticut is projected to almost triple by the year 2010.

Ten percent of the State Park attendance on Long Island in 1969 was at the two north shore State Parks (Sunken Meadow and Wildwood). Bathing activity at these two parks accounted for 1.0 million visits in that year. New York State indicates an expected regionwide increase of 50 percent in park visits for the facilities in and around the New York City area in 1975.

Since much of the swimming on Long Island Sound takes place on private beaches for which there are no records, the estimated value of bathing as a recreational activity must be based upon the public sector data. Multiplying $1.50 (Source - Bureau of Outdoor Recreation) for the value of a swimming recreation day by 3.5 million visitors in 1969 to Long Island Sound beaches shows an annual value of $5.25 million. The magnitude of this value is illustrated when visualized as the equivalent of a capital investment of $65.5 million at 4-7/8 percent repayable in principal and interest over a 20-year period at a rate of $5.25 million annually.

Bathing activity at beaches on the sound by the year 2000 will more than double according to State estimates. The estimated annual value of the activity can increase to more than $10.5 million. The costs of food, transportation and entertainment associated with swimming if added to this value increases the total estimated annual expenditure for the bathing activity to some $42 million by the year 2000 (estimate is based upon Outdoor Recreation Resources Review Commission data).

Recreational Boating

Recreational boating has increased significantly in the last decade. In New York State, over 120,000 boats are registered in the New York City-Nassau-Suffolk-Westchester County area. This number is expected to increase 63 percent between 1965-1975, with a major portion of both use and growth occurring in the Long Island area (Nassau-Suffolk Counties). The number of boats registered in New York and operating on the sound will probably increase more than 150 percent by the year 2010.

About 65,000 boats of all sizes and types are based in Connecticut and operate on Long Island Sound. The number of recreational boats in Connecticut coastal waters is expected to increase about 8 percent per year. The number of boating recreation days per year is expected to increase from 6.2 million in 1960 to about 15 million in 2010.

The recreational boating industry is big business. The annual value of this activity approaches $642 million for Long Island Sound and could increase to some $1.5 billion by the year 2010. This value consists of estimates of the value of all boats operated on the sound, the value of the recreation day, and the value of the peripheral expenses associated with owning a boat.

Fishing

Fishing as a sport in Long Island Sound is extremely popular due to the variety of both fresh and salt water species found within a short trip from the sound's shores.

The annual demand for salt water fishing in Connecticut is presently estimated at 2.8 million activity days and is expected to double by the year 2000. This fishing activity based upon a conservative per person cost of only $1.50 daily represents a value to the area of over $4 million.

New York State reported an estimated 1.6 million persons were fishing on Long Island Sound in 1970; of course, the number of days each person goes fishing will vary. Sport fishing in New York State is expected to double for the period 1965-1975.

Shellfishing

People living around Long Island Sound are fortunate to have oysters, hard clams, lobsters, and some bay scallops in their shoreline waters.

According to the New York State Bureau of Marine Fisheries, of the 433,000 acres of Long Island Sound in New York State, over 100,000 acres are suitable for shellfish production. Approximately 61,000 acres, including productive and nonproductive areas, have been closed to shellfishing.

The Public Health Service's 1966 National Register of Shellfish Production Areas reports that in Connecticut, of a total of 83,000 acres of shellfish growing areas, about 15,000 acres are closed to shellfishing. The Connecticut Shell Fish Commission administers approximately 57,000 acres of franchised, leased, and public shellfish grounds.

Approval or condemnation of a shellfish area is predicated upon bacteriological data resulting from water samples collected by appropriate State or Federal agencies and the proximity to an actual or potential source of pollutants. Other factors such as hydrographic conditions, presence of pesticides and radionuclides, and available dilution water are also considered. (See section IV, Description of Criteria.)

The estuaries and coastal harbors surrounding Long Island Sound are significant areas of shellfish production. These areas contain the optimum combinations of bottom type, temperature, salinity, and water quality which are key factors in shellfish growth. Estuaries, harbors and embayments are also areas of urban and industrial development. Polluted by waste discharges, many of these areas are closed to shellfishing.

Closed Shellfish Areas in New York - Moving from west to east:

The area of Long Island Sound west of a line between the Byram River on the north and Prospect Point on the south, including the entire Westchester County shoreline, East River, Little Neck Bay, and Manhasset Bay.

In addition, the following harbors are closed or partially closed to shellfishing:

Hempstead Harbor
Vicinity of Matinicock Point
Oyster Bay Harbor (part)
Cold Spring Harbor (part)
Huntington Harbor (part)

Centerport Harbor (part)

Northport Harbor (part)

Nissequogue River

Port Jefferson Harbor (part)

Offshore area of Northville (oil unloading facility)

Vicinity of Mattituck Inlet

Vicinity of Inlet Point (Greenport sewer outfall)

Vicinity of west end of Fishers Island

Closed Shellfish Areas in Connecticut - Harbors and estuaries surrounding the following municipal areas, moving from west to east:

Greenwich

Darien - Stamford

Darien - Norwalk

Norwalk

Westport - Fairfield

Bridgeport

Stratford - Milford (Housatonic River)

Milford

New Haven

East Haven - Branford

Thimbles Islands

Madison - Clinton

Old Saybrook - Old Lyme (Connecticut River)

Four Mile River

Bride Brook

Groton - New London (Thames River)

Groton - Mumford Cove

Groton - Mystic River

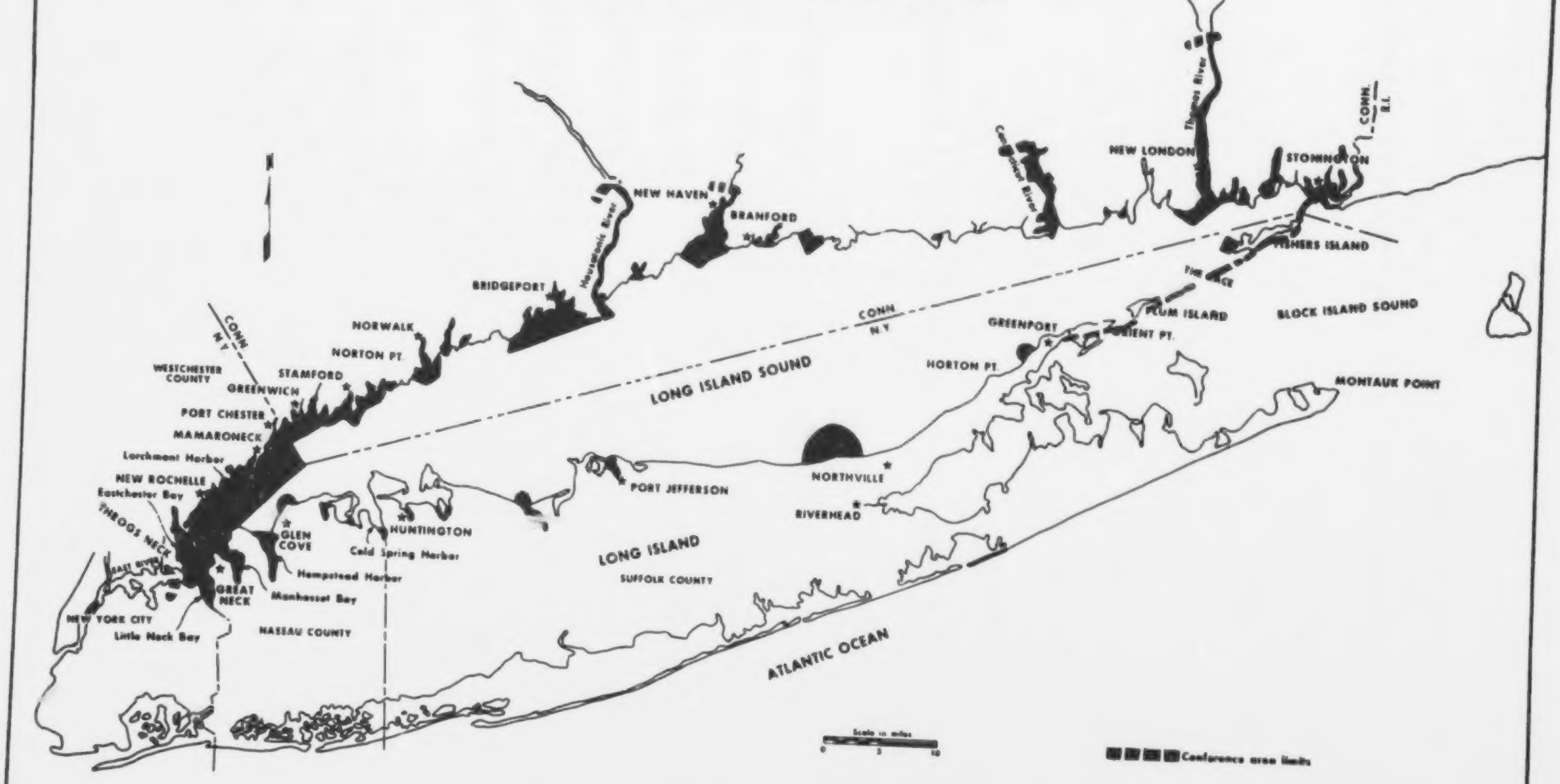
Stonington

Figure 3 shows the areas of shellfish closure in Long Island Sound.

Closure of these shoreline areas eliminates the shellfish grounds most accessible to the commercial and recreational shellfishermen. The Connecticut Shell Fish Commission indicates that the present sport fisheries are generally confined to the eastern Connecticut shoreline from Branford to Stonington, and the market areas extend westerly from Branford.

Shellfish ground closures have also contributed, in part, to the decrease in commercial shellfishing activity. Closure of near-shore waters has forced commercial fishermen to relocate their shellfish beds further out where conditions often impair or slow shellfish growth, consequently requiring longer work hours and a greater expenditure of effort. Seed and market shellfish are still raised in

CLOSED SHELLFISH AREAS
LONG ISLAND SOUND


CONN.
R.I.
STONINGTON
NEW LONDON
Thames River
Connecticut River
NEW HAVEN
BRANFORD
Housatonic River
BRIDGEPORT
NORWALK
NORTON PT.
STAMFORD
GREENWICH
CONN
N.Y
WESTCHESTER COUNTY
PORT CHESTER
MAMARONECK
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
EAST RIVER
NEW YORK CITY
Little Neck Bay
GREAT NECK
Manhasset Bay
Hempstead Harbor
GLEN COVE
Cold Spring Harbor
HUNTINGTON
NASSAU COUNTY
LONG ISLAND
SUFFOLK COUNTY
PORT JEFFERSON
LONG ISLAND SOUND
NORTHVILLE
RIVERHEAD
HORTON PT.
GREENPORT
ORIENT PT.
PLUM ISLAND
THE RACE
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
ATLANTIC OCEAN
Scale in miles
0
5
10
Conference area limits

closed areas, but are transplanted under the supervision of the State Health Department to open areas where they are naturally self-purified. This activity is particularly prevalent in Branford, New Haven Harbor, Housatonic River, Darien and Norwalk areas of Connecticut. In New York, hard shell clams are harvested from the closed beds of the Westchester and Nassau County shores for transplant to the open waters along the Atlantic coast (south shore of Long Island).

Prior to 1920, oyster companies operating from New Haven Harbor sent seed oysters to the bays in Long Island and Narragansett Bay in Rhode Island. Several companies transplanted seed oysters from Connecticut to Gardner's Bay and Shelter Island Sound in New York and reharvested them for processing in their plants in New Haven. Other companies, similarly, operated in eastern Long Island waters and in Oyster Bay. This production represented an annual business of more than $5 million to the shellfish industry during that period.

In 1965 and 1966 a group of local fishermen from Stratford, Connecticut began a shell planting program in an attempt to increase the productivity of public beds in the Housatonic River. In 1966, the Connecticut Shell Fish Commission received a grant from the U. S. Department of the Interior to be used for the rehabilitation of the oyster industry. At this time the Commission provided 12,000 bushels of shells for planting and, together with additional shells from the local harvesters, 17,000 bushels were laid. The Commission reported that during the summer of 1966 an excellent oyster "set" was obtained. This was the only planting of materials that took place on any of the natural beds of Connecticut. This limited local effort was successful.

Pollution Affecting Shellfisheries

In 1970, the Connecticut State Department of Health issued new shellfish closure lines affecting communities in Branford, Norwalk, and Darien. Some of these closures forced the shellfishermen to alter their operations and move their shellfish stock further offshore into waters acceptable for harvesting.

Mr. J. Richard Nelson, President, Long Island Oyster Farms, Incorporated, New Haven, Connecticut, indicated that their company had extensive seed beds in Upper New Haven Harbor and the Quinnipiac River prior to 1920. Since that time these beds have become unfit for planting because of sludge deposits resulting from inadequately treated wastewater discharges. Sludge from pollution has destroyed at least

1,000 acres of formerly productive seed beds in New Haven Harbor and the Quinnipiac River. To augment the supply of seed oysters, Mr. Nelson's firm constructed an oyster hatchery at Northport, New York, at a cost close to $1 million.

Six hundred acres of shellfish beds are active during part of the year at Stony Creek in Branford where oysters are harvested for direct marketing. However, because of pollution from nearby summer homes and cottages, this area is closed to shellfishing annually from May 1 to October 1.

Three shellfish dealers operating in Norwalk Harbor reported that the cost for harvesting shellfish has increased as a result of the shellfish closure lines being extended farther off shore. The dealers claim that about 20 percent more working time is necessary in working the hard clam and oyster beds because of travel distance committed to seek suitable grounds. The shifting of shellfish populations from one location to another involves a risk that can cause a 50 percent loss when transplanting hard clams and a 15 to 20 percent loss when handling oysters.

The grounds inside the chain of islands in Norwalk Harbor are considered the best producing grounds on the east coast. The shellfish harvested here represent the best in growth, development, and flavor. Should the shellfish closure lines be moved beyond the islands, this would reduce the supply of good beds and force the fishermen to use questionable grounds in deeper waters and the risk of greater losses due to the lack of protection from storms.

Water pollution along the shores of Greenwich, Stamford, and Darien has contributed to closing of several oyster firms in the area. Out of 11 oyster dealers who have operated in the Norwalk-Darien area, five have gone out of business with little chance of returning. The Norwalk Estuary, including parts of Darien, produces approximately $1 million worth of shellfish annually.

Accordingly, the direct and indirect damages to the shellfishing industry are extensive as a result of water pollution. It has been estimated by the Connecticut Shell Fish Commission and Mr. Richard Nelson, President, Long Island Oyster Farms, Inc. (see Appendix C) that, as a result of the closures due to pollution, losses to the shellfish industry over the past 50 years exceed $500 million. Comparison by Mr. Nelson of the oyster yield between 1920 and 1970 indicates a difference of $17 million in 1970 alone.

III - SOURCES OF POLLUTION

Long Island Sound and its estuaries, harbors, and embayments receive pollutional discharges from municipalities, institutions, industries, Federal installations, combined sewer overflows, recreational boating, and discharges of oil and petroleum products. Thermal discharges and disposal of dredged spoils also affect the quality of waters in the sound.

Municipal and Institutional Waste

A total of 60 municipal and institutional systems serving approximately 1,272,000 persons discharge approximately 170 million gallons per day (mgd) of wastewater into the open waters of Long Island Sound and its embayments. Twenty-two of these systems are in New York, and 38 are in Connecticut. Available data regarding these sources are summarized in Appendix B, Table B-1. The general location of each discharge is also shown in Appendix B, Figure B-1.

Of the 60 systems listed, five in Connecticut serving less than 1 percent of the sewered population, are individual septic tank communities, 33 (12 in New York and 21 in Connecticut) serving 73 percent provide primary treatment; and 22 (10 in New York and 12 in Connecticut) serving 27 percent provide secondary treatment. All of the primary and secondary treatment plants have chlorination facilities.

Thirteen systems, accounting for about 20 percent of the municipal flow, discharge directly to Long Island Sound after primary or secondary treatment. The Mamaroneck and New Rochelle primary treatment facilities in New York are the largest of these systems. The 47 other facilities discharge the remaining 80 percent of the wastewater flow to the embayments and estuaries of the sound or to subsurface fields. Nearly all of these facilities provide at least primary treatment prior to discharge. The primary facilities at Bridgeport and New Haven, Connecticut are the largest, discharging 64 mgd to the tributary waters of the sound. Five relatively small systems in Connecticut are presently served by individual septic tanks with treatment facilities scheduled for completion by June 1971.

The ratio of area population served (1,272,000) to area total population, (2,480,000), indicates that 55 percent of the population in 1969 were served by primary or secondary sewage treatment facilities. Service is projected for 1,610,000 people by 1980. In order to sewer 100 percent of the population in 2010, facilities will be needed for 4,340,000 people.

Federal Facilities

There are 16 Federal installations, including 11 lighthouses (see Appendix B, Table B-2), discharging approximately 2.0 mgd of treated and untreated wastewater to Long Island Sound and its embayments and estuaries (see Figure B-2). Approximately 5.3 mgd of untreated cooling water is also discharged from Federal installations.

Remedial measures are scheduled for completion at all 11 lighthouses by FY 1972. These measures include incinerator toilets, municipal connections and subsurface disposal.

The U.S.D.A. Animal Disease Laboratory at Plum Island, New York discharges 0.046 mgd of domestic wastewater after septic tank treatment and chlorination. Approximately 0.055 mgd of laboratory wastewater is comminuted, neutralized, and sterilized by a heat-pressure process prior to discharge. The Environmental Protection Agency has recommended subsurface disposal for the septic tank effluent and the laboratory wastewater after upgrading to secondary treatment.

The U. S. Air Force plant 43, Avco Lycoming, at Stratford, Connecticut, provides treatment for 0.576 mgd of industrial wastewater prior to discharge to the Housatonic River. Sanitary wastes are discharged to the Stratford municipal system.

There are potential problems at this plant associated with intermittent discharges of oily and industrial wastes. The State of Connecticut has requested that Avco Lycoming provide facilities by October 31, 1972 to prevent any such discharges without appropriate treatment. The State has outlined the following schedule for abatement:

A. On or before July 31, 1971 submit for the review and approval of the Water Resources Commission an engineering report describing all sources and volumes and characteristics of all industrial wastes and oils and describe any required treatment facilities;

B. On or before December 31, 1971 submit for the review and approval of the Water Resources Commission contract plans and specifications for the required treatment facilities;

C. On or before February 29, 1972 verify to the Water Resources Commission that construction of the required facility has been started;

D. On or before October 31, 1972 verify to the Water Resources Commission that the constructed facilities have been placed in operation.

Avco Lycoming Division is developing a proposal which will include recommendations for abatement of these discharges. The Water Quality Office of the Environmental Protection Agency has contacted the Air Force to ensure that appropriate measures are taken to fund and implement the plan within the timetable outlined by the State.

The U. S. Navy New London Submarine Base at Groton, Connecticut discharges 1.30 mgd of domestic wastewater to the Thames River after primary treatment. The base will connect to the Town of Groton's sewer system which will provide secondary treatment.

The U.S.S. FULTON is a submarine tender which discharges approximately 0.04 mgd of untreated domestic wastewater to the Thames River. By April 19, 1971, the FULTON will undergo a major overhaul during which onboard sewage treatment units will be installed. Provisions will also be made to enable the ship to connect to a municipal sewer which will be constructed on the pier as a joint Federal-Connecticut Department of Transportation project. This will provide backup facilities as the onboard units undergo testing to determine their operating characteristics under service conditions.

The U. S. Navy owns four barges which are berthed at the General Dynamics piers to provide temporary quarters for naval personnel while their ship is under repair. Facilities completed in November 1970 pump wastewater to the dockside collection system which discharges to the town of Groton system.

Industrial Waste

At least 137 sources of industrial wastewater discharge to the embayments and estuaries of Long Island Sound. None discharges directly to the sound. Five of these sources are in New York, and the remaining 132 are in Connecticut. (See Appendix Table B-3). The general location of each source is shown in Appendix Figure B-3.

Industrial wastewaters result from the processing operations associated with the manufacture of food and kindred products, primary metals products, chemicals and allied products, and textiles. The metal finishing industry, in particular, is heavily concentrated in Connecticut. Significant volumes of wastewater result from the pickling, plating, and anodizing processes associated with this industry.

Flow from industrial operations contributes a variety of contaminants including, in addition to oxygen-consuming materials, oil, grease, solvents and toxic substances, chromic and other acids, cyanide, and alkali.

Combined-Sewer Overflows

Sixteen municipal collection systems (four in New York and 12 in Connecticut) serving approximately 680,000 people have combined sewers (See Appendix Table B-4). When it rains, large quantities of untreated sanitary and industrial wastewater can be discharged directly to the receiving waters via combined-sewer overflows. These overflows, a mixture of wastewater and stormwater, contribute organic material which decrease dissolved oxygen, introduce floating, suspended, and settleable solids which reduce the aesthetic and recreational values of the water and increase bacterial densities posing a danger to public health. Other pollutants such as toxic substances, oil, and grease are often contained in the overflow water.

Recreational Boating Wastes

The presence of the nearly 240 marinas with over 64,000 berths which service the thousands of boats registered in counties bordering the sound indicates that the waters of the conference area are used extensively for recreational boating. Countless other boats also travel into and along the sound for weekend or extended visits. Wastes from these recreational boating activities constitute one more source of pollution to the waters of the sound. The discharge of untreated human fecal matter into the sound and its estuaries adds pathogenic bacteria contributing to a health hazard where the water is used for contact recreation or harvesting of shellfish for consumption. Bilge pumping and litter from boating activities is another source of pollution causing a deterioration of the aesthetic quality of the environment.

Discharges of Oil and Petroleum Products

The sound is used as a major transportation route for large oil tankers and barges carrying both crude and refined petroleum. A large number (102 in 1969) of oil unloading and storage facilities dot the shoreline of this body of water. Two offshore oil unloading facilities are also located on the sound -- at the Long Island Lighting

Company near Port Jefferson, New York and at Northville Industries, Incorporated near Northville, New York. In 1968, about 25 million tons of petroleum and petroleum products were delivered to storage facilities along the sound via commercial ships.

The discharge of a large amount of oil into Long Island Sound could be a catastrophe to the ecology of this water body. In 1969, there were 17 recorded oil pollution incidents in the sound. There is no doubt that there were many minor spills of petroleum products into the sound which were unreported and therefore unrecorded.

Two major spills of oil occurred in 1970 and 1971, respectively. On June 5, 1970, 670,000 gallons of No. 2 fuel escaped into Bridgeport Harbor due to a faulty valve at a petroleum tank farm located at Bridgeport, Connecticut. On January 23, 1971, 386,000 gallons of No. 2 fuel and kerosene escaped into the sound due to the grounding of an oil tanker in the vicinity of New Haven, Connecticut. These spills caused damage to boats and shorefront properties and were harmful to marine life and water fowl.

Max Blumer, Senior Scientist of the Woods Hole Oceanographic Institute, in a paper "The Problem of Oil Pollution in Coastal Waters" has said, "All crude oils are poisons for all marine organisms; many crude oil distillates are more severely poisonous because they contain higher proportions of the immediately toxic compounds. Long-term toxicity may harm marine life that is not immediately killed by spills, and oil can be incorporated into the meat of marine animals, making it unfit for human consumption. Crude oil and oil products may cause cancer in marine organisms and in man; even at very low concentrations oil may interfere with processes which are vital for the propagation of marine species."

Disposal of Dredging Spoils

There are 19 disposal areas located in the sound which are controlled by the U. S. Army Corps of Engineers (see Figure 4). During 1968, more than 1.4 million cubic yards of material dredged from nearby rivers and harbors were dumped into these disposal areas. These dredged materials, often containing pollutants which have settled as bottom deposits in the estuaries and embayments, can affect water quality.

Municipalities located around Long Island Sound do not dispose of sewage sludge in the sound. Sewage sludge from New York's Glen Cove, Roslyn, Belgrave and Port Chester water pollution control facilities is barged for ocean disposal in the New York Bight, 12 miles east of

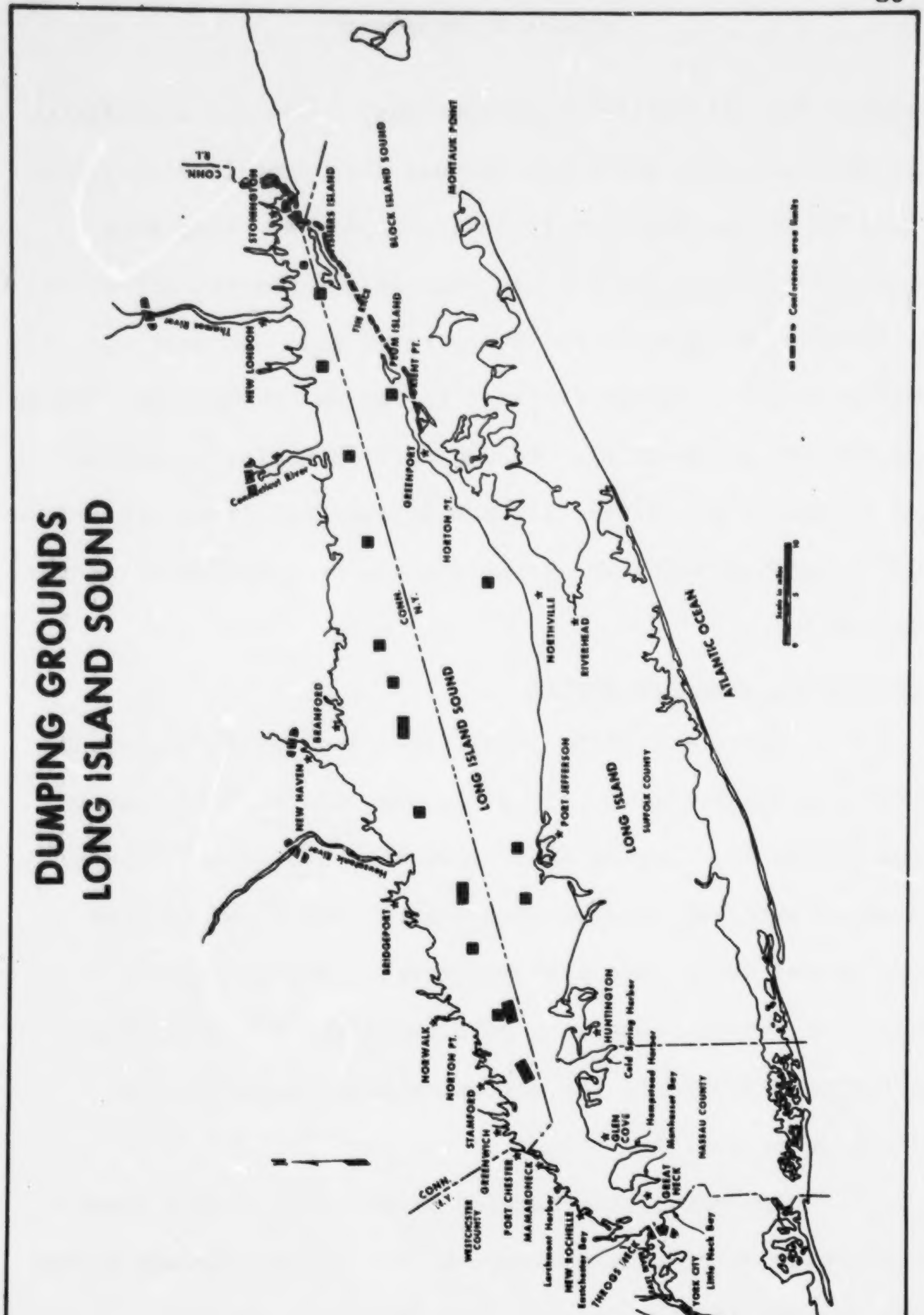

DUMPING GROUNDS
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
NEW LONDON
Thames River
THE RACE
PLUM ISLAND
ORIENT PT.
Connecticut River
GREENPORT
HORTON PT.
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
BRANFORD
NEW HAVEN
Housatonic River
LONG ISLAND SOUND
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
BRIDGEPORT
NORWALK
NORTON PT.
STAMFORD
HUNTINGTON
Cold Spring Harbor
Oyster Bay
Hempstead Harbor
GLEN COVE
Manhasset Bay
NASSAU COUNTY
CONN.
N.Y.
WESTCHESTER COUNTY
GREENWICH
PORT CHESTER
MAMARONECK
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
GREAT NECK
NEW YORK CITY
Little Neck Bay
Scale in miles
0
5
10
Conference area limits

Figure 4

Sandy Hook, New Jersey. Sludge from the conference area's remaining municipal facilities is disposed of in sanitary landfills.

Thermal Pollution

Seventeen fossil fuel steam electric generating plants with a total installed capacity of 2,930 megawatts use the waters of Long Island Sound for cooling purposes. Many industries also withdraw cooling water from the sound. For power generation alone, an estimated 2,100 mgd of water from the sound was used in 1967 for this purpose. The effect that these heated water discharges have upon the sound's ecology will depend upon many variables which include: the temperature and volume of the heated effluent; the depth and dispersion pattern of the rejected thermal waste at the outfall; the circulation pattern and depth of the receiving water; and the nearness to other discharges. Increased water temperature from these discharges can upset the entire ecological system with proliferation of less desirable flora and fauna and decreased assimilative capacity. Researchers are currently investigating the possible benefits from thermal discharges under controlled conditions, but there is general agreement that the overall effect of indiscriminately adding heated effluents to the sound would be detrimental.

The projected increase in population and industrial activity will demand greater power generating capacity. The estimated cooling water requirements to meet these future demands will exceed 17,000 mgd by 1990. The possible adverse effects from the release of this significant quantity of waste heat into the water environment of the sound must be a consideration in the development of any new power generating facility.

IV - PRESENT WATER QUALITY

The extent to which Long Island Sound is affected by pollution can be shown by comparing existing quality with the approved State and Federal water quality standards. These standards and their associated criteria are furnished in Appendix D. The Environmental Protection Agency conducted two surveys, one in late September 1969 and another in July 1970, to collect data for defining existing quality. The 1969 survey was concerned primarily with the quality of the open waters of the sound. The July 1970 survey concentrated on harbors and embayments along the north shore of the sound from Throgs Neck to the Connecticut-Rhode Island State line. Data regarding both surveys are summarized in Appendix E and F. The results of other studies conducted by the Interstate Sanitation Commission and the States of New York and Connecticut and Nassau

County were also reviewed to supplement the EPA data.

Important criteria established by the water quality standards to characterize water quality and the effects of pollution include temperature, dissolved oxygen, and bacteria. Nutrient limits, although not established by the standards, also characterize water quality and show the effects of pollution and the ability of the water to support growth of aquatic plants.

The results of the Environmental Protection Agency surveys showed that these indicators of quality ranged generally as follows:

Temperature ranged from 15.8 to 24.6 degrees Centigrade, dissolved oxygen ranged from a low of 0.6 to a high of 10.3 mg/l, total coliform densities ranged from less than 2 to greater than 100,000/100 ml, and fecal coliform densities ranged from less than 2 to greater than 36,000/100 ml.

The open waters of the sound are generally of good quality. That is, they are above the State-Federal water quality standards. Pollution problems, however, exist in the harbors and embayments of the sound which are surrounded by the highly developed urban areas. Water quality in these areas was below the approved standards. Areas where existing water quality does not conform to the standards are identified in Table 6 and shown in Figure 5. Table 7 lists those areas where surveys conducted by State, interstate and county agencies showed quality below the standards. The specific problems are discussed in this section.

Description of Criteria

Temperature affects the solubility of dissolved oxygen, rates of chemical and biochemical reactions, bacterial growth rates, and the growth of biological flora and fauna. The temperature of a body of water will depend upon the season of the year, water depth, currents, and the discharges of large volumes of hot "cooling" water. Deep waters such as those found in lakes, estuaries, and the ocean show a smaller response to climatic change than shallow waters.

Adequate levels of dissolved oxygen are necessary to support the survival and propagation of fish and other forms of aquatic life. Dissolved oxygen is also necessary for aerobic bacterial action which stabilize decomposable organic material. The amount of dissolved oxygen in water will depend upon the transfer rate of oxygen from the atmosphere, photosynthetic oxygen production, the imposed oxygen-demanding waste load, and salinity and temperature. Where the oxygen demand of organic materials exceeds the available dissolved oxygen, anaerobic conditions exist and

TABLE 6

WATER QUALITY STANDARDS VIOLATIONS IN LONG ISLAND SOUND AS DETERMINED BY EPA SURVEYS OF SEPTEMBER-OCTOBER 1969 AND JULY 1970

Location	Water Quality Classification[1]	Year Of Survey	Standards Violation	
			D.O.	Coliform
AREAS OF SERIOUS DEGRADATION[2]				
East River	SB	1969-70	X	X
Off Stepping Stones	SB	1969-70	X	X
Off Hewlett Point	SB	1969-70	X	X
Eastchester Bay	SB	1970	X	X
Hutchinson River	SB	1970	X	X
Little Neck Bay	SB	1969		X
Manyasset Bay	SA	1969		X
Off Peningo Neck	SA	1969-70		X
Port Chester Harbor	SB	1969-70		X
Greenwich Harbor	SB	1969		X
Stamford Harbor	SB	1969-70		X
Norwalk Harbor	SC	1970	X	
Bridgeport Harbor	SB,SC	1969		X
Housatonic River	SA,SB	1970	X	X
Milford Harbor	SB	1970	X	
New Haven Harbor	SA,SB,SC	1969-70	X	X
New London Harbor	SB	1970		X
Thames River	SB	1970	X	X
AREAS OF MARGINAL WATER QUALITY[3]				
New Rochelle Outfall	SB	1969		X
Larchmont Harbor	SA	1969		X
Mamaroneck Outfall	SA,SB	1969-70		X
Blind Brook Outfall	SA	1970		X

1/ See Appendix D for the criteria pertaining to the water quality classification.

2/ Criteria used for establishing the areas of Serious Degradation include:

DO level below standard on one or more occasions.
Coliform equal to or above median value on two occasions.
Coliform density equal to or above 5000 MPN on one or more occasions.

3/ Criteria used for establishing the areas of Marginal Water Quality indlude:

Coliform density above median value on only one occasion.
DO level equal to or only 0.1 mg/l above standards level.

TABLE 7

WATER QUALITY STANDARDS VIOLATIONS IN LONG ISLAND SOUND AS DETERMINED BY STATE, COUNTY AND INTERSTATE AGENCIES

Location	Water Quality Classification	Year of Survey or Report
East River	SB	1959,1970
Off Stepping Stones	SB	1969,1970
Off Sands Point	SA	1969,1970
Off Hewlett Point	SA	1970
Little Neck Bay	SB	1970
Hempstead Harbor	SA	1969,1970
Oyster Bay	SA	1969,1970
Cold Spring Harbor	SA	1969,1970
Port Jefferson Harbor	SA	1966-1969
Huntington - Northport Harbor	SA	
Off Peningo Neck (Porgy Shoal)	SA	1967-1970
Mamaroneck Harbor	SA	1967-1970
Larchmont Harbor	SA	1967-1970
Off Port Chester Harbor	SA	1967-1970
Housatonic River (from mouth to Derby Dam)	SB	1970
Connecticut River (from mouth to Hurd State Park)	SB	1970
Byram River (from mouth to tide water)	SC	1970
Stamford Harbor - East Branch inside barrier	SC	1970
Norwalk Harbor - inside Calfgastan Point	SC	1970
Ash Creek, Black Rock Harbor	SC	1970
Bridgeport Harbor	SC	1970
Tidewater inside Bridgeport Shellfish line	SB	1970
New Haven Harbor	SC,SB	1970
Mill River	SC	1970
Quinnipiac River	SC	1970
Mystic River - inside Shellfish line	SB	1970
Stonington - inside Shellfish line	SA	1970

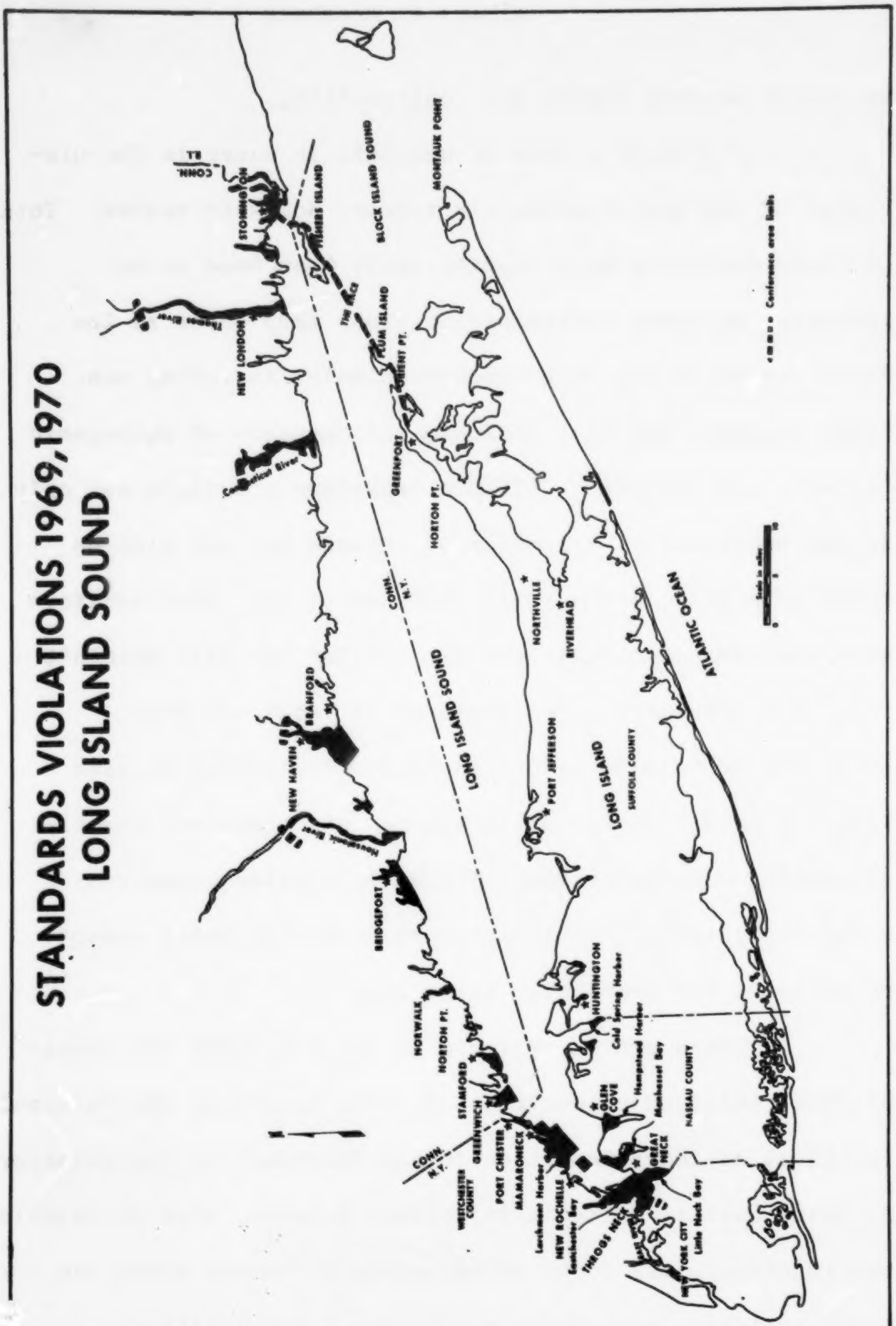

STANDARDS VIOLATIONS 1969,1970
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
NEW LONDON
Thames River
THE RACE
PLUM ISLAND
ORIENT PT.
Connecticut River
GREENPORT
HORTON PT.
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
BRANFORD
NEW HAVEN
LONG ISLAND SOUND
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
Housatonic River
BRIDGEPORT
HUNTINGTON
Cold Spring Harbor
Hempstead Harbor
NORWALK
NORTON PT.
STAMFORD
GREENWICH
GLEN COVE
Manhasset Bay
NASSAU COUNTY
CONN.
N.Y.
WESTCHESTER COUNTY
PORT CHESTER
MAMARONECK
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
GREAT NECK
NEW YORK CITY
Little Neck Bay
Conference area limits
Scale in miles

Figure 5

the water becomes septic and foul-smelling.

A primary source of bacteria in water is the discharge of raw and inadequately treated domestic wastes. Total coliform densities have traditionally been used as an indicator of human contamination since they occur in the fecal matter of all warm-blooded animals, including man. Their presence may also indicate the presence of pathogenic bacteria and viruses. Coliform organisms originate not only in the excrement of warm-blooded animals but may also be found naturally in the soil. The use of the fecal coliform group as indicator organisms can further identify possible fecal contamination. The presence of fecal coliform organisms above safe levels indicates contamination with human or animal wastes which can contain organisms capable of causing disease in man. The water quality standards establish levels of total coliform densities which cannot be exceeded for particular water uses.

There are no criteria in the standards for levels of fecal coliform concentrations. The report by the National Technical Advisory Committee to the Secretary of the Interior on Water Quality Criteria indicates, however, that detectable health effects may occur in recreational waters where the fecal coliform level is above 400 per 100 milliliters.

Shellfish contaminated by pathogenic bacteria which are eaten raw or after improper cooking result in disease and illness. The National Shellfish Sanitation Program administered under the Food and Drug Administration was established to control such disease transmission. State and Federal governmental agencies as well as industry participate in this program of preserving and managing shellfish resources. Through the program, in which New York and Connecticut are members, guidelines for proper sanitary quality of waters approved for shellfish harvesting have been established.

Approval or condemnation of a shellfish area is based upon:

1. Amount of dilution water available;
2. Hydrographic conditions;
3. Presence of sources of pollution which might discharge fecal material, radionuclides, pesticides, and chemical wastes;
4. Possible pollution sources, such as toilet discharges from boats directly over shellfish beds;
5. Lack of knowledge of the above factors pending sanitary surveys; and
6. Bacteriological data, with samples collected under the worst hydrographic conditions. Bacteriologic limits included in the approved water quality standards

require that the total coliform count be less than 70 MPN (most probable number) organisms per 100 ml.

Nutrients are necessary to the growth of algae and aquatic plants. When other environmental conditions such as temperature, sunlight, and salinity are satisfactory, nutrients such as nitrogen and phosphorus become critical restraining growth factors. Low concentrations of phosphorus and nitrogen will support algal growth. Algal growth in limited quantities is desirable as a necessary link in the aquatic food chain. Enrichment of the receiving water with nutrients can cause excessive algal growths to occur which renders the water unsightly with accompanying obnoxious odors and reduced dissolved oxygen levels.

Water Quality in 1969

The results of the survey conducted by the EPA in 1969 show that the open waters of the sound, from the New York City - Nassau County line in the west to The Race, near Fishers Island, in the east, (1969 stations 5-23) are of good quality. Temperatures throughout the sound ranged from 17.8 degrees C to 20.2 degrees C. Thermal stratification was not detected although slightly lower temperatures were found in the deeper waters. Surface dissolved oxygen concentrations ranged from 6.4 to 7.8 mg/l (84 to 100 percent saturation). Dissolved oxygen concentrations (due mainly to the higher salinity) were 5 to 10 percent lower in the deeper water than near the surface. Total and fecal coliform levels were generally less than 10 organisms per 100 ml except at the extreme western end near the New York City - Nassau County line, where the level approached 300 total coliform organisms per 100 ml. Concentrations of total phosphorus ranged from a high of 0.26 mg/l in the western end to 0.03 mg/l in the eastern end. Nitrate concentrations ranged from 0.19 to 0.06 mg/l. Chlorophyll _a_ ranged from a high of 14.5 mg/m^3 (milligrams per cubic meter) to a low of 2.6 mg/m^3.

Over the past 15 years, State, county, interstate, and local agencies have conducted extensive water quality surveys in selected portions of Long Island Sound. Generally, the results of these studies were similar to those found during the EPA survey of 1969.

Western Long Island Sound - Upper East River

Water quality in the west end of the sound and the adjacent waters of the East River (1969 stations 1-4, 24, 25, 35, and 36) indicated that violations of the approved water quality standards occurred during the fall 1969 survey. The data showed that quality of the water improves from west to east with the lowest water quality existing in the East River. Dissolved oxygen levels for all the stations in this section ranged from 4.6 mg/l in the East River to 8.0 mg/l near Orchard Beach. Dissolved oxygen at two locations (Whitestone Bridge in the East River and Throgs Neck in the sound) were below the required concentration of 5.0 mg/l. Total coliform bacterial levels ranged from 27,000 organisms per 100 ml in the East River to 150 organisms per 100 ml near City Island. Four locations contained coliform densities greater than the monthly median value of 2,400 per 100 ml established by the standards. These stations were in the East River, Long Island Sound at Throgs Neck Bridge, near Stepping Stones, and in Little Neck Bay. Fecal coliform levels at these locations were greater than the level recommended by the National Technical Advisory Committee, suggesting contamination from inadequately treated wastes and a possible health hazard to people swimming or boating in the area. Nutrient concentrations were generally higher than those found in other areas of the sound. Phosphorus concentrations ranged 0.36 mg/l to 0.19 mg/l while nitrate levels varied from 0.25 to 0.19 mg/l. These water quality conditions indicate the effect of waste sources originating from the metropolitan New York City area.

The Nassau County Department of Health has carried out extensive bacteriological studies along the beaches and in the harbors on the north shore of Nassau County. The results of its 1969 studies indicate that total coliform levels in the western end of the sound and in several harbors were in violation of the established standards for Class SB and SA waters, respectively. Based upon 5 or more samples collected monthly, median values for total coliform per 100 ml exceeding permissible levels were found at Stepping Stones and Sands Point in the sound and in Little Neck and Manhasset Bays.

In the summer of 1959, the Interstate Sanitation Commission conducted a water pollution survey of the East River and the western end of Long Island Sound. That survey revealed that in the upper East River and west end of Long Island Sound mean percent saturation of dissolved oxygen was generally below the required 50 percent of saturation. Total coliform values found at the majority of stations were greater than 2,400 per 100 ml. It was expected at that time that the new chlorination facilities at the New York City Tallmans Island waste treatment plant would reduce the coliform density in the upper East River - western Long Island Sound area. The study also indicated that pollution from the upper East River can move through Throgs Neck to Stepping Stones Beach.

Southern Shore

Along the southern shoreline from the entrance of

Hempstead Harbor to Fishers Island (1969 stations 26 to 34), dissolved oxygen concentrations were greater than 100 percent saturation at four locations and not less than 90 percent at any location. Total coliform levels were less than 4 per 100 ml except in Port Jefferson Harbor and near Inlet Point where levels were 50 per 100 ml and 22 per 100 ml, respectively. Fecal coliform levels were all less than 8 per 100 ml. Phosphorus concentrations declined from west to east (0.23 to 0.03 mg/l) and nitrate concentrations showed the same general trend (0.22 to 0.07 mg/l). Chlorophyll a levels, a measure of the concentration of phytoplankton (microscopic green plants), were about twice those of the open sound waters, reaching a high of 19.7 mg per cubic meter.

The 1969 Nassau County Department of Health studies indicate that median densities of total coliform per 100 ml were in violation of permissible values in portions of Hempstead Harbor and Oyster Bay.

Studies conducted by the New York State Department of Environmental Conservation during 1966-1969 reveal that water quality problems restrict the permissible use (namely, shellfishing for market purposes) in Oyster Bay, Cold Spring Harbor, Port Jefferson Harbor, and Huntington - Northport Harbor. In these waters, total coliform densities require that certain areas be closed to the harvesting of shellfish.

Westchester County Shore

Along the shoreline of Westchester County (1969, stations 37-43), total coliform levels ranged from less than 8 organisms per 100 ml to 4,000 organisms per 100 ml. At three of the seven station locations, the coliform levels were greater than the established standard for contact recreation. These locations were near the New Rochelle and Mamaroneck outfalls and off Peningo Neck. In Larchmont Harbor, the extremely high chlorophyll a (52.1 milligram per cubic meter) suggests an abundant growth of phytoplankton.

Port Chester Harbor

Port Chester Harbor, including a 1-1/2-mile tidal section of the Byram River, forms part of the boundary between New York and Connecticut. The EPA survey of 1969 (Stations 44 and 45) and an earlier survey in September 1968 showed that the quality of these waters violates the approved standards. In 1969, the sample collected in the harbor contained a total coliform level of 14,000 per 100 ml and a fecal level of 2,100 per 100 ml. Another station sampled in the open surface waters adjacent to the harbor near Bluefish Shoal (classified for commercial harvesting of shellfish) contained a total coliform density of 100 per 100 ml.

In 1968, EPA conducted a separate study of the interstate waters of the Byram River Basin. The results of the survey showed that in the 1-1/2-mile tidal stretch dissolved oxygen ranged from a low of 0.9 mg/l up to and above the water quality standards established by New York and Connecticut. Total and fecal coliform levels in the stretch indicate that inadequately treated municipal wastes enter these waters. In the tidal portion of the Byram River, the water was visibly polluted by oil and suspended matter. A distinct oily odor filled the air, and the banks were coated with oil. Gas bubbles were surfacing at several locations. The bottom in this stretch of the Byram River was found to consist primarily of ooze saturated with oil and which released a slight hydrogen sulfide odor. Benthic life was typical of a degraded water. The Byram River forms the interstate boundary between New York and Connecticut. Interstate pollution occurs in the Byram River, and these waters eventually enter the harbor and sound creating interstate pollution problems there too.

Connecticut Shore

Along the Connecticut shore (1969 stations 46-59), from Port Chester Harbor to New Haven Harbor, dissolved oxygen concentrations ranged from 5.1 to 9.6 mg/l (64 percent - 120 percent saturation). The bacterial densities varied from

4 per 100 ml to greater than 30,000 per 100 ml for total coliform and 2 per 100 ml to 9,800 per 100 ml for fecal coliform.

Problem areas along the western Connecticut shore were found in the waters in or adjacent to the highly urbanized harbors of Greenwich, Bridgeport, and Stamford. In these harbors, total coliform densities far exceeded the median level established by the standards. The high density of fecal coliforms suggests gross pollution from inadequately treated municipal wastes and represents a potential health hazard to those using these waters for recreation.

New Haven Harbor

Two stations (1969 stations 60-61) were sampled in New Haven Harbor. One sample was taken in the harbor while the other was taken at the breakwater in Long Island Sound. The analytical data suggest dissolved oxygen and bacterial problems. Dissolved oxygen measured at 4.0 mg/l. In the harbor, total and fecal coliform densities were greater than 100,000 and 36,000 per 100 ml, respectively, indicating gross pollution from human wastes. In the outer harbor, total and fecal coliform counts were still above the standards although reduced to less than 3,000 and 300, respectively.

In September and October 1967, EPA conducted a microbiological and biological study of New Haven Harbor. These surveys confirmed that pollution problems exist in the harbor. The data also showed the effect of discontinuing chlorination of the four water pollution control plant effluents. Chlorination was being carried out in September, but not during the October surveys. During disinfection, average maximum total coliform levels in the harbor ranged from 220 to 17,200 per 100 ml, while during the period in which disinfection was discontinued total maximum coliform densities showed much higher levels ranging from 1,410 to 348,000 per 100 ml. Average maximum fecal coliform levels during the surveys varied from 80 to greater than 16,000 per 100 ml with disinfection and from 790 to 92,000 per 100 ml after chlorination was terminated.

At and beyond the breakwater system, the data again showed marked reduction in coliforms. Average maximum total coliform levels were less than 230 per 100 ml, but greater than the established safe level of 70 per 100 ml for shellfishing. Analysis of water samples taken in the fall of 1967 in the vicinity of shellfish beds showed a direct relationship in the concentrations of coliforms found in the overlying waters and in shellfish. The data confirm the ability of the shellfish to concentrate contaminants in their meat.

The biological survey conducted in conjunction with the microbiological study consisted primarily of an examination of the benthic conditions underlying the harbor waters. The results indicate the cumulative effect on the harbor of inadequately treated municipal and industrial wastes, oil seepage from oil storage facilities and ships, and pollutants originating from the Mill and Quinnipiac Rivers. The upper harbor area, comprising 8 percent of the total harbor area (from Mill and Quinnipiac Rivers to City Point) was found grossly polluted from a biological standpoint. Sludge deposits exceeding 6 inches in depth were prevalent throughout the area. The benthic population, extremely limited in numbers and species, consisted only of worms and snails. Strong septic, hydrogen sulfide odors were observed in all bottom samples, suggesting extensive anaerobic decomposition.

In the remaining portion of the harbor from City Point to the breakwater, sludge depths of 2 to 5 inches were observed. Foul-smelling odors caused by anaerobic decomposition were again prevalent in the bottom samples.

Bottom samples outside the breakwater reflected clean, unpolluted water. There were generally no sludge buildups or detectable odors of decomposition found at the various stations sampled. Benthic species indicated a wide diversity of life, such as would be found in a clean water environment.

New London Harbor

Water quality in New London Harbor during the September - October 1969 survey (stations 68-69) indicated a marginal dissolved oxygen and bacterial condition. The dissolved oxygen (5.1 mg/l) was slightly greater than the 5.0 mg/l established by the standards. Fecal coliform densities were also high (1,200 per 100 ml).

Water Quality in 1970

Previous data and the 1969 Environmental Protection Agency survey of the open waters of Long Island Sound showed sufficient areas of degraded water quality to warrant more extensive and detailed study. Accordingly, the EPA, the Interstate Sanitation Commission, the Nassau and Westchester County Health Departments, and the State University of New York agreed to conduct a more detailed cooperative study during 1970. Each agency concentrated its activities on different portions of the sound. The results of the 1970 EPA Survey, which was conducted along the north shore of the sound, support the findings in 1969 and reveal new areas of water quality standards violation. These results are summarized in Table 6 and Figure 5 and are discussed in the following paragraphs.

Western Long Island Sound

Water quality standards violations were found in the western end of Long Island Sound (1970 stations 1-6, 2A). Dissolved oxygen levels ranged from 0.6 mg/l in the Hutchinson River to 6.5 mg/l near Orchard Beach. Total coliform densities ranged from 35,000 organisms per 100 ml at Throgs Neck to 79 organisms per 100 ml near Orchard Beach. Fecal coliform densities ranged from 11,000 to 33 organisms per 100 ml. These bacterial concentrations were 2-10 times those observed in 1969.

Water quality failed to meet the dissolved oxygen and bacterial criteria at Throgs Neck, East Chester Bay, and in the open waters off Great Neck (Stepping Stones and Hewlett Point). Total coliform densities from Throgs Neck to Orchard Beach were 2-1/2 times the monthly median value of 2,400 organisms per 100 ml established by the standards. The high fecal coliform densities indicate recent contamination by inadequately treated human or animal feces. The nutrient data indicate high levels of enrichment. Total phosphorus (range: 0.18-0.52 mg/l) and nitrate (range: 0.09-0.18 mg/l) concentrations were 2-10 times levels elsewhere in the sound.

Extremely low dissolved oxygen levels and high coliform densities indicate gross contamination of the upper Hutchinson River. Combined sewer overflow may represent a source of this contamination. During the survey, extensive floating trash and heavy recreational use were observed in this area. The high fecal coliform density represents a definite hazard to recreational use.

A study conducted by the Interstate Sanitation Commission during July 28 - August 14, 1970 in the upper East River and western Long Island Sound showed violations of the approved standards. Interstate Sanitation Commission results indicate that, although dissolved oxygen has increased since the 1959 study mentioned earlier, levels in the upper East River and the adjacent waters of Long Island Sound were below the standards of 5.0 mg/l. Saturation levels were below 50 percent. Coliform densities in these waters were found to exceed the limits established by the standards with geometric mean ranging from 56,690 MPN per 100 ml in the East River to less than 100 MPN per 100 ml in western Long Island. These coliform densities were noticeably higher than those found during the 1959 survey.

Westchester County Shore

Standards violations continued along the shoreline of Westchester County (1970 stations 7-15, 9A, 10A) from New Rochelle to Port Chester Harbor. Dissolved oxygen levels ranged from 5.3 mg/l adjacent to the Mamaroneck sewage outfall to 9.8 mg/l in Larchmont Harbor. Dissolved oxygen concentrations were below acceptable levels in the

Class SA waters adjacent to the Mamaroneck and Blind Brook sewage outfalls. Total coliform densities ranged from 2,400 organisms per 100 ml in Port Chester Harbor to 33 organisms per 100 ml at the entrance to Larchmont Harbor. Total coliform densities exceeded the established levels at these locations and in Port Chester Harbor. Fecal coliform densities ranged from 13 to 230 organisms per 100 ml. Chlorophyll a concentrations were noticeably higher in Larchmont and Mamaroneck Harbors than in the open sound waters.

Standards were violated in Port Chester Harbor in 1970. The total coliform density at the entrance to the Byram River was 2,400 organisms per 100 ml. Extensive floating trash, aquatic plant growth, and a slight oil slick were observed.

A comprehensive study was conducted by the New York State Department of Environmental Conservation during 1969-1970 of the waters of Long Island Sound in Westchester County. The results of the study indicated an improvement in water quality in the waters generally west of Mamaroneck Harbor. It showed that the area northeast of Mamaroneck Harbor continued to contain high densities of coliform organisms.

Connecticut Shore

Samples were collected at 43 locations along the

Connecticut shore from Port Chester Harbor to New Haven Harbor (1970 stations 16-58, 45A). Dissolved oxygen ranged from 3.8 mg/l in Norwalk Harbor to 10.3 mg/l off Smith Reef (near Stamford). Total coliform density ranged from 2 organisms per 100 ml at several locations to greater than 24,000 organisms per 100 ml on the Housatonic River. Fecal coliform densities ranged from 2 to 5,400 organisms per 100 ml.

Approved coliform and dissolved oxygen standards were violated in Stamford Harbor, Norwalk Harbor, the Housatonic River, and Milford Harbor. In the Housatonic River, dissolved oxygen concentrations were below the established limit of 5.0 mg/l at three of the five stations sampled. Total coliform densities were also greater than the established standards at three locations. The maximum total coliform level of 24,000 organisms per 100 ml was found at two upstream stations. Fecal coliform densities were also significantly high at these stations. These low dissolved oxygen levels and high densities of total and fecal coliform organisms (24,000 and 5,400 organisms per 100 ml, respectively) suggest that the Housatonic River receives discharges of inadequately treated municipal waste. The area of water quality degradation includes both the river itself and the area adjacent to its mouth.

Dissolved oxygen levels were also depressed in Norwalk (3.8 mg/l) and Milford Harbors (5.3 mg/l). High total and fecal coliform densities (4,900 and 490 organisms per 100 ml, respectively) were observed in Stamford Harbor.

Chlorophyll a concentrations were noticeably higher in Cos Cob, Stamford, Sheffield, Norwalk, Southport, Black Rock, and Bridgeport Harbors and the upper Housatonic River when compared to the offshore waters. These levels suggest the presence of abundant phytoplankton or plant growth.

A 1970 report by the Water Resources Commission, State of Connecticut on water quality standards lists those waters where present quality is below the adopted standards. The report, which confirms the results of the 1970 Environmental Protection Agency survey, indicates that problems of quality exist in Connecticut River, Housatonic River, Byram River, Stamford Harbor, Norwalk Harbor, Black Rock Harbor, Bridgeport Harbor, New Haven Harbor, Mill River and Quinnipiac River, Mystic River and Stonington.

New Haven Harbor

New Haven Harbor (1970 stations 59-69) continues to exhibit poor water quality. The water quality standards were violated at 6 of the 11 locations sampled. Water quality at 5 of the 6 stations in the inner harbor (classified SC) failed to meet criteria established for dissolved oxygen and bacteria. Dissolved oxygen levels varied from 1.4 to 4.2 mg/l. Total and fecal coliform densities ranged from

3,300 to 24,000 and 350 to 5,400 organisms per 100 ml, respectively. Water quality standards were not violated in the outer harbor (classified SB). Dissolved oxygen concentrations ranged from 5.5 to 6.1 mg/l. Total coliform densities ranged from 23 to 220 organisms per 100 ml. However, dissolved oxygen was below acceptable levels outside the breakwater at the harbor entrance (classified SA).

Chlorophyll a concentrations exceeded 10 milligrams per cubic meter at 4 of 6 locations in the inner harbor and reached a maximum of 17.1 mg/m^3. These levels suggest abundant phytoplankton growth.

Branford to Connecticut-Rhode Island State Line (excluding Thames River)

From Branford to the Connecticut-Rhode Island State line shoreline (1970 stations 70-91, 106-116) waters excluding the Thames River were of high quality. Approved standards were not violated in this area during the survey. The mean dissolved oxygen concentration in these waters was 7.8 mg/l. Total coliform densities ranged from less than 2 organisms per 100 ml to 540 organisms per 100 ml in Mystic and Stonington Harbors. Fecal coliform densities were generally less than 30 organisms per 100 ml.

Chlorophyll a and nutrient concentrations and bacterial densities were much lower than those in urbanized areas west of New Haven Harbor. Chlorophyll a concentrations were higher than background levels in the Connecticut River and Mystic and Stonington Harbors.

New London Harbor - Thames River

Water quality standards were violated at seven of 13 locations in the New London Harbor - Thames River complex (1970 stations 92-105). Dissolved oxygen levels ranged from 4.2 to 8.6 mg/l. Both total and fecal coliform densities ranged from 33 to greater than 24,000 organisms per 100 ml. Bacterial densities were higher than acceptable levels at five locations upstream from the Route 95 bridge. Four of these locations also exhibited total coliform densities greater than 24,000 organisms per 100 ml. These high total and fecal coliform densities -- exceeded only in the western Long Island Sound - East River area -- represent a definite hazard to recreational use.

Biology

In the balanced biological system of Long Island Sound sunlight and nutrients foster the growth of microscopic aquatic plants, the grass of the sea. These microscopic plants are consumed by the microscopic animals, clams, oysters, shrimps, and small fish. Larger fish feed upon the smaller, and waste from all these organisms is broken down by bacteria into the nutrients which start the cycle anew. It is becoming apparent that all portions of this complex biological cycle are now undergoing change.

The results of the EPA surveys of Long Island Sound in 1969 and 1970 showed that nutrients and chlorophyll a concentrations varied: for phosphorus, 0.52 - $<$0.01 mg/l; nitrate 0.47 - 0.01 mg/l, total Kjeldahl nitrogen, 3.66 - 0.1 mg/l and chlorophyll a 88.8 - 1.0 mg/m^3. Phosphorus and nitrogen generally decreased toward the east. Chlorophyll a, a measure of primary production of plant life, also followed this same pattern. Riley, in 1959, found phosphate and nitrate concentrations in Long Island Sound to decrease from west to east. He also found a sevenfold decrease in the chlorophyll concentration per unit volume between the western and eastern end of the sound. Harris, in 1959, observed maximum levels of all fractions of nitrogen in the western end of the sound. Riley, in 1941, observed chlorophyll a concentrations ranging from 5.2 - 62.0 mg/m^3. He found these values much higher than the oceanic waters outside the sound. Nutrients, particularly phosphorus, were also higher.

The EPA surveys indicate that nutrients and chlorophyll levels were generally higher near the population centers. Specifically, the western end of the sound and embayments such as Oyster Bay in New York and Stamford, Southport, Bridgeport, and New Haven Harbors in Connecticut had nutrient levels and quantities of floating aquatic plants noticeably higher than other areas of the sound. These extensive growths of aquatic plants may occur only sporadically (e.g., New Haven Harbor, 1969), as indicated by the State University of New York in their surveys, but the history of their occurrence dates back to the early 1950's. If the incoming load of nutrients continues to increase, the incidence of these nuisance conditions will multiply. It is then that the water will become green, the profusion of rooted and floating plants will interfere with swimming, boating, and fishing, and periodic high tides will leave the beaches covered with decaying marine plants which produce obnoxious odors.

The study of nutrient enrichment is an area which requires extensive and careful evaluation. The causes of problems produced by extensive aquatic growth are far more complex than a simple review of nitrogen, phosphorus, and chlorophyll concentrations alone. Research in this area is a definite need.

Summary

The water quality picture of Long Island Sound which has been presented is a reproduction of what has happened before at other places in other times. The quality of portions of the sound are deteriorated to levels below the adopted standards. These conditions which are now occurring in the sound are occurring by default rather than by design, and to follow that path is to invite ecologic disaster and the loss of a valuable natural resource.

This natural system can be well managed and an ecologic balance restored. It is not too late. A major effort toward this end has been initiated by the States of Connecticut and New York, and these efforts are described in the next section. This effort, primarily aimed at the construction of upgraded and expanded water pollution control facilities, will provide the prompt action needed to abate pollution in areas of presently degraded water quality and prevent the spread of degradation to areas which are now of good quality. The formulation of a comprehensive water resource management program might well represent a rational plan which can ensure the future development of the Long Island Sound region while protecting the quality of its waters.

V - POLLUTION CONTROL PROGRAMS

Federal

Water Quality Standards

The Water Quality Act of 1965 amended the Federal Water Pollution Control Act and provided for the establishment of water quality standards for interstate waters. Under the provisions of the act, the States were given the option of setting water quality standards by June 30, 1967 for interstate waters or portions thereof within their borders and coastal waters. The standards were to be consistent with the purposes of the act which are "...to enhance the quality and value of our water resources and to establish a national policy for the prevention, control and abatement of water pollution."

The standards adopted by the States include a classification of water uses, water quality criteria for these uses, and a plan for the implementation and enforcement of the water quality criteria adopted. The standards shall protect the public health or welfare, enhance the quality of the water, and serve the purposes of the act. In establishing standards, consideration was to be given to their use and value for public water supply, propagation of fish and wildlife, recreation, agriculture, industrial, and other legitimate uses.

The standards adopted by New York and Connecticut were approved by the Administrator of EPA. Since the Administrator has determined that they are consistent with the provisions of the act, they are Federal water quality standards applicable to those interstate waters. Appendix D contains a definition of best water usage and its appropriate water quality criteria pertinent to the waters of Long Island Sound.

Construction Grants

In the Long Island Sound area, to date, EPA has spent or allocated $11,500,331 in Federal grants to assist in the construction of 58 water pollution control projects having a total eligible cost of $142,615,317. Fifteen projects are in New York, and 43 are in Connecticut. Table 8 lists these projects.

Federal Facilities

Federal agencies are charged by the President and the Congress to provide leadership for the nationwide pollution abatement program. Executive Order 11507 issued by the President February 4, 1970 declares: "It is the intent of this Order that the Federal Government in the design, operation and maintenance of its facilities shall provide leadership in the Nation with effort to protect and enhance the quality of our air and water resources." Actions necessary to meet the requirements of the Executive Order are to be completed or under way by December 31, 1972, except where enforcement conferences or water quality standards require earlier actions, in which case the earliest date must be met.

TABLE 8

FEDERAL CONSTRUCTION GRANT PROJECTS

LONG ISLAND SOUND

Name of Project	Project No.	Eligible Costs	Grant Amount	Date of Grant	Description[1]	Status[2]
		NEW YORK[3]				
Belgrave S. D.	190	$ 400,000	$ 120,000	1-63	STP (A)	3
Glen Cove (C)	236	120,000	36,000	4-64	STP (A)	3
Glen Cove (C)	432	504,000	166,320	9-68	PS, FM, INT	2
Great Neck S. D.	84	975,000	250,000	8-59	STP (A)	3
Great Neck S. D.	289	1,138,943	375,851	7-66	STP (A), PS, FM	3
Great Neck (V)	341	265,000	87,450	3-67	STP (A)	2
North Hempstead (T)	609	366,600	120,990	4-70	STP (A)	1
Northport (V)	237	28,600	8,580	5-64	INT, PS, FM	2
Northport (V)	577	508,000	152,340	9-70	STP (A)	1
Oyster Bay S. D.	130	1,161,300	348,390	8-61	STP (A)	2
Port Chester (V)	67	916,300	250,000	9-58	STP (A)	3
Port Washington S. D.	351	637,000	191,100	8-67	STP (A)	2
Roslyn (V)	342	133,602	44,089	5-67	STP (A)	3
Westchester Co. (Blind Brook)	105	2,875,000	250,000	2-61	STP (A)	3
Westchester Co. (Mamaroneck)	218	5,020,000	1,506,000	6-63	STP (A)	2
		$ 15,049,345	$3,907,110			

TABLE 8 (Cont'd)

FEDERAL CONSTRUCTION GRANT PROJECTS

LONG ISLAND SOUND

Name of Project	Project No.	Eligible Costs	Grant Amount	Date of Grant	Description[1]	Status[2]
			CONNECTICUT[4]			
Ansonia, City of	63	$ 1,564,980	$ 516,440	6-67	STP	3
Ansonia, City of	91	2,103,000	50,000 (L)	11-68	STP (A)	2
Branford, S. A.	18	1,373,145	250,000	9-61	STP	3
Bridgeport, City of	28	29,815	8,940	6-63	STP (A)	3
Bridgeport, City of	98	11,540,000	50,000 (L)	8-69	STP (A)	2
Bridgeport, City of	99	15,725,000	1,500,000 (L)	8-69	STP (A)	2
Canaan Fire Dist.	81	418,500	10,000 (L)	6-68	STP, INT	2
Connecticut DPW	25	661,926	198,577	5-63	STP, INT	3
Conn. Health Dept.	76	239,000	6,000 (L)	12-68	STP	2
Derby, City of	50	915,000	250,000	11-65	STP, INT	3
East Haven, Town of	14	998,586	250,000	8-60	INT	3
East Haven, Town of	68	2,130,695	42,000 (L)	9-67	STP (A), INT	2
Fairfield, Town of	126	2,200,000	60,000 (L)	6-70	STP (A)	1
Fairfield, Town of	55	819,897	270,566	8-66	STP (A)	3

TABLE 8 (Cont'd)

FEDERAL CONSTRUCTION GRANT PROJECTS

LONG ISLAND SOUND

Name of Project	Project No.	Eligible Costs	Grant Amount	Date of Grant	Description[1]	Status[2]
		CONNECTICUT[4] (Cont'd)				
Greenwich, Town of	21	$ 846,123	$ 250,000	7-62	INT	3
Greenwich, Town of	113	1,350,000	25,000 (L)	12-69	INT	2
Groton, Town of	61	339,000	111,870	2-67	STP (A), INT	2
Groton, Town of	136	13,615,000	100,000 (L)	11-70	STP, FM, PS	1
Groton, City of	104	3,544,000	50,000	8-69 (L)	STP (A)	2
Hamden, Town of	38	1,320,000	250,000	3-64	INT	3
Milford, City of	72	5,196,000	80,000	1-68 (L)	STP, O, INT	2
New Canaan, Town of	17	653,714	196,114	4-61	STP (A)	3
New Haven, City of	39	2,294,000	250,000	6-64	STP (A)	3
New Haven, City of	95	82,749	45,511	3-69	STP (A)	3
New London, City of	36	27,000	8,100	2-64	STP (A)	3
New London, City of	135	2,459,000	50,000 (L)	11-70	STP, PS, INT	1
North Haven, Town of	37	1,647,100	250,000	3-64	STP	3
North Haven, Town of	90	385,100	11,000	11-68 (L)	INT	2

TABLE 8 (Cont'd)

FEDERAL CONSTRUCTION GRANT PROJECTS

LONG ISLAND SOUND

Name of Project	Project No.	Eligible Costs	Grant Amount	Date of Grant	Description[1/]	Status[2/]
		CONNECTICUT[4/] (Cont'd)				
Norwalk, City of	19	$ 127,677	$ 38,303	1-62	STP (A)	3
Norwalk, City of	42	1,692,000	558,360	10-64	STP (A)	2
Norwalk, City of	139	5,361,000	100,000 (L)	11-70	STP (A)	1
Norwich, City of	1	1,517,696	250,000	2-57	STP, INT, PS	3
Norwich, City of	26 (APW)	339,439	-	-	STP (A), FM	3
Norwich, City of	92	1,783,000	40,000	12-68 (L)	INT	2
Shelton, City of	46	970,450	250,000	1-65	STP, INT	3
Southington, Town of	5	1,031,080	250,000	8-57	STP	3
Stamford, City of	77	100,800	55,440	4-68	INT	2
Stamford, City of	103	2,109.500	52,000 (L)	7-69	INT	2
Stonington, Town of	120	3,842,000	50,000 (L)	4-70	STP, INT, PS	2
Stratford, Town of	124	15,450,000	100,000 (L)	5-70	STP, INT, PS, FM	1
West Haven, City of	64	5,039,000	400,000 (L)	8-67	STP, INT	2
West Haven, City of	131	12,665,000	100,000 (L)	8-70	STP (A), INT, PS, FM	1

TABLE 8 (Cont'd)

FEDERAL CONSTRUCTION GRANT PROJECTS

LONG ISLAND SOUND

Name of Project	Project No.	Eligible Costs	Grant Amount	Date of Grant	Description[1/]	Status[2/]
		CONNECTICUT[4/] (Cont'd)				
Westport, Town of	9	$ 1,059,000	$ 250,000	4-59	STP, O, INT	3
		$127,565,972	$7,634,221			

(L) Limited Federal Grant. State Prefinancing Remainder of Federal Share.

1/ Description of Project:

(A) - Additions and/or Alterations
FM - Force Main
INT - Intercepting Sewers
STP - Sewage Treatment Plant
O - Outfall Sewer

2/ Status:

1. Project Approved (Grant Offer Made)
2. Under Construction
3. Project Completed

3/ New York State provides a 30% State construction grant to communities to assist in the construction of Water Pollution Control Facilities. This program also provides for prefinancing of Federal grants, where necessary, up to 29% because the funding of the Federal program is far below needs. In 1965, a billion dollar bond issue was authorized to finance the State Grant Program.

4/ Bond Issues totalling $250 Million have been financed for matching construction grants funds of 30%. The law also provided for State prefinancing of the Federal share of the grant. Connecticut has prefinanced all major FY 69 and 70 projects with limited Federal Grants averaging 5% of Eligible Costs.

Section 21 of the Federal Water Quality Improvement Act of 1970 requires, among other things, that: "Each Federal agency (. . .includes Federal departments, agencies, and instrumentalities) having jurisdiction over any real property or facility or engaged in any Federal public works activity of any kind, shall, consistent with the paramount interest of the United States as determined by the President, insure compliance with applicable water quality standards and the purpose of this Act in the administration of such property, facility or activity."

Federal activities have been instructed to program for needed improvements in order that requests may be submitted to the Congress for the appropriations needed to meet the compliance dates. Specific details for each of the Federal facilities located on Long Island Sound are listed in Appendix B.

State

New York

The New York Water Pollution Control Act of 1949 established a program of stream classifications for designated waters of the State. In response to the Federal Water Quality Act of 1965, New York was one of the first States in the Nation to secure approval from the Federal Government of quality standards for interstate waters. Appendix D presents the classifications and water quality criteria for Long Island Sound submitted to the Secretary of the Interior by New York. Appendix Table B-1 and B-3 summarize the implementation schedule for each identified waste source as established by New York State in order to achieve compliance with the standards.

Also listed are those waste sources which, in accordance with the standards, have ordered or voluntary implementation dates not specified but fall within the Pure Waters Program ending date of March 31, 1972. According to these schedules, there are five industrial facilities identified as sources of pollution. A breakdown of the compliance status is as follows: one is on schedule; one is behind schedule; one has a pending completion date (with no interim date); and two have no established schedule at this time. Of the 22 municipal waste sources that are identified, one is completed, three are behind schedule, three have pending interim dates, 11 have pending completion dates (with no interim dates), and four presently provide adequate treatment with no established schedule.

The New York State Legislature, in 1966, passed into law section 33 of the Navigation Law. This section, which became effective March 1, 1970, regulates the disposal from vessels of sewage and litter into the waterways of the State. Administrative rules and regulations promulgated in conformance with the laws prohibit the discharge of all wastes without complete treatment. Holding tanks, incineration, and anaerobic digesters are some of the treatment methods permitted under the law. Effective implementation of section 33 will protect Long Island Sound from the discharge of wastes from watercraft.

Connecticut

The Connecticut Water Resources Commission under Connecticut Public Act No. 57, approved May 1, 1967, has held five public hearings relative to the adoption of standards for the waters of the State and has adopted water quality standards for all interstate, intrastate, and coastal waters. The standards applicable to interstate and coastal waters were approved by the Secretary of the Interior in his letter of February 15, 1968, with two exceptions. Revisions intended to overcome the exceptions along with other modifications were adopted by the Commission on November 17, 1969, and were approved by the Secretary on April 21, 1970.

To achieve compliance with the standards, the Commission has issued orders to all known polluters, both municipal and private. The orders are aimed at treating all sources of pollution through the installation of secondary treatment of the activated sludge type or its equivalent, except in cases where a higher degree of treatment will be required to maintain the water quality standards. The original State schedule provided for completion of all waste treatment facilities by the end of 1972. The Commission has, in some cases, modified original schedules after review of new information and special conditions. Appendix Table B-1 and B-3 summarize the implementation schedule for identified waste sources as established by the State of Connecticut.

According to these schedules, 132 industrial facilities are identiried as sources of industrial and/or domestic pollution. A breakdown of the compliance status is as follows: 4 are no longer discharging; 33 are on schedule; 79 are behind schedule; 10 have pending completion dates (with no interim dates); and 6 have no schedules established at this time. In addition, 17 facilities are required to abate domestic pollution as well as industrial discharges; namely, by connection to a municipal system. A breakdown of the compliance status for these is as follows: 1 is no longer discharging; 9 are on schedule; and 7 are behind schedule. The municipal plants that have been identified total 38, of which 6 are on schedule, 26 are behind schedule, 1 has a pending completion date (with no interim date) and 5 presently provide adequate treatment with no established schedule.

Interstate Programs

Interstate Sanitation Commission

The Interstate Sanitation Commission was formed by the Tri-State Compact between the States of New Jersey, New York, and Connecticut to have jurisdiction in the Interstate Sanitation District. This district consists of all coastal, estuarine, and tidal waters within or covering the signatory States in an area which includes the New York Harbor complex and the waters of Long Island Sound from the East River to a line extending from the east side of New Haven Harbor on the Connecticut shore to the east side of Port Jefferson Harbor on the New York shore.

The Commission has the power to make rules, regulations and issue orders with regard to pollution and to determine the adequacy of treatment provided by wastewater facilities. It carries out a program of surveillance and, when necessary, can resort to the courts to compel enforcement. The Commission endeavors to convince municipalities and industries of the need for voluntary and cooperative abatement measures before it considers enforcement action.

The Commission exhibits its regional leadership in numerous ways. It has made substantial progress toward the enactment of legislation which will enable the Commission to place in force, through appropriate steps, improved classification of waters and effluent standards. Presently, the Commission performs the valuable role of facilitating the development of uniform standards and regulations. Surveillance of water quality is carried out throughout the Commission's jurisdiction by means of sampling and analysis on routine boat runs as well as more intensive studies in selected areas. The Commission also conducts an extensive waste sampling program and develops programs for the training of treatment plant operators.

New England River Basins Commission

The New England River Basins Commission is a Federal-State commission composed of representatives of the six New England States and New York, eight Federal agencies, and six interstate agencies. Established in September 1967 under the Water Resources Planning Act, the Commission is charged with: a) serving as the principal agency for coordination of all plans for water and related land resources; b) preparing and updating a comprehensive, coordinated joint plan for water and related land resources; and c) recommending schedules of priorities for water resources programs. Special studies and projects related to these purposes have been conducted.

A recent Presidential Executive Order (Order No. 11528, dated April 24, 1970) extended the jurisdiction of the

Commission to include Long Island Sound except the portion lying west of a line extended from the Connecticut - New York boundary at the northern shore of the sound to the New York City - Nassau County boundary on the southern shore of the sound.

The Commission provides leadership in a cooperative Federal, State, and local comprehensive plan for the waters and related land resources of Long Island Sound, initiated in 1971 under the Water Resources Planning Act.

New England Interstate Water Pollution Control Commission

Comprising the six New England States and the State of New York, the New England Interstate Water Pollution Control Commission was established by interstate compact in 1947. The Commission provides a vehicle for interstate cooperation in water pollution control through the classification of interstate streams, research on regional water pollution control problems, and public information. Recently, it has directed its attention to programs providing training for waste treatment plant operators.

CONCLUSIONS

1. Long Island Sound is a valuable natural resource which the present generation holds in trust for posterity, with an obligation to pass it on in the best possible condition.

2. Pollution of Long Island Sound, particularly in

its harbors and embayments, has adverse effects on fish, shellfish, and other aquatic life; causes interference with recreational use of the waters; despoils beaches and shorefront property; and causes interference with aesthetic enjoyment. Dredging and filling of marshlands also significantly affect the ecology of the sound. The sources of this pollution include wastes from municipalities and industries (including oil and heated effluents), Federal activities, watercraft, and sewer overflows.

3. Many commercial shellfish areas in New York and Connecticut are closed to the harvesting of shellfish for direct human consumption or market purposes as a result of high bacterial levels or proximity to sources of pollution. It is estimated that losses to the shellfish industry over the past 50 years have exceeded $500 million as a result of these closures.

4. Water quality standards have been established to preserve and protect the waters of Long Island Sound. Recent reports and surveys show that water quality in areas of Long Island Sound, particularly in the major harbors and embayments, does not meet Federal-State water quality criteria. Moreover, many of the Federally approved water quality standards implementation schedules are not being met.

5. A primary source of bacteria in water is the

discharge of raw and/or inadequately treated domestic wastes. Evidence of severe bacterial pollution, in violation of the water quality standards, has been found by Environmental Protection Agency and by other State and interstate agencies to occur in the East River, off Stepping Stones, off Hewlett Point, Eastchester Bay, Hutchinson River, Little Neck Bay, Manhasset Bay, off Peningo Neck, Port Chester Harbor, Greenwich Harbor, Stamford Harbor, Bridgeport Harbor, Housatonic River, New Haven Harbor, New London Harbor, and Thames River.

6. The small quantity of oxygen normally dissolved in water is perhaps the most important single ingredient necessary for a healthful, balanced, aquatic life environment. The discharge of inadequately treated municipal and industrial wastes with their high concentrations of biochemical oxygen demand has resulted in seriously low levels of dissolved oxygen in violation of the Federal-State standards in many areas of the sound. EPA studies show that these areas are: East River, off Stepping Stones, off Hewlett Point, Eastchester Bay, Hutchinson River, Norwalk Harbor, Housatonic River, Milford Harbor, New Haven Harbor, and Thames River. At present, the main body of Long Island Sound has not evidenced signs of oxygen deficiency.

7. Many of the harbors and embayments of Long

Island Sound have high nutrient levels. Algal blooms have occurred in Long Island Sound, with the most recent occurring outside New Haven Harbor in the fall of 1969.

8. Vessels of all types, commercial, recreational, and Federal, plying the waters of Long Island Sound and its tributaries, are contributors of untreated and inadequately treated wastes in local harbors and in the open waters of the sound. These discharges intensify local problems of bacterial pollution.

9. Oil discharges from industrial plants and commercial ships and careless loading and unloading of cargoes despoil beaches and other recreational areas, damage shorefront property, coat the hulls of pleasure boats, and are deleterious to fish and other aquatic life.

10. Disposal of polluted dredged material in the open waters of Long Island Sound contributes to degradation of water quality in the sound.

11. The circulation pattern of Long Island Sound is such that the wastes discharged in Connecticut cross the State line into New York. In the western part of the sound, wastes discharged in New York cross the State line into Connecticut.

12. Discharges of sewage, industrial wastes, and other wastes originating in New York and Connecticut cause pollution of Long Island Sound which endangers the health or

welfare of persons in States other than those in which such discharges originate. This pollution is subject to abatement under the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1151, et seq.).

RECOMMENDATIONS

It is recommended that:

1. Enforcement action be initiated immediately against those sources of pollution not in compliance with Federally approved water quality standards.

2. Waste treatment be provided by all municipal and industrial waste sources affecting Long Island Sound so as to provide compliance with federally approved water quality criteria established by the States.

3. All municipal and industrial discharges containing fecal coliform bacteria be effectively disinfected year-round.

4. Where federally approved water quality standards implementation schedules do not contain interim dates for submission of final plans and specifications and for start of construction, such dates be furnished by the States to the conference chairman within 30 days from the date of this conference. In all such cases, the established dates for completion of construction, as specified in the federally approved State water quality standards, shall continue to apply.

5. There are 46 municipal and industrial waste sources in the conference area not included in the federally approved water quality standards implementation schedules. These sources and the State schedules are listed in Tables B-1 and B-3 contained in this report. It is recommended that these schedules be adopted by the conferees as the enforceable conference implementation schedules.

6. The Environmental Protection Agency, the States, and the Interstate agencies develop a water quality management program for Long Island Sound. The program shall evaluate alternatives and recommend specific programs, including financial and organizational arrangements, to secure long-term compliance with the water quality standards and a rational management scheme to protect the sound. The program shall include, but not be limited to:

a. Determination of areas of critical value for recreation and for finfish and shellfish production, and of measures for restoring these areas or protecting them from future encroachments;

b. Alternate municipal and industrial waste collection and treatment systems;

c. Location, siting, and design of powerplants;

d. Disposal of dredged material, sludge, and other wastes;

Albert W. Bromberg

e. Financial, organizational, and legal arrangements for implementing recommended actions.

It is recommended that the program be initiated immediately. It should be coordinated with the interagency multipurpose plan for the water and related land resources of Long Island Sound being initiated under the leadership of the New England River Basins Commission. None of these activities shall be construed as superseding the existing water quality standards implementation schedules or the recommendations of the Long Island Sound Enforcement Conference.

7. The practice of transporting polluted dredge material to spoil areas in the open waters of Long Island Sound be prohibited.

8. A comprehensive study of the combined sewers in the area be conducted by Connecticut and New York to determine methods of elimination or treatment, and the report of this study be completed by April 1973. Upon completion of this study, the conferees shall establish a program and schedules for alleviating this source of pollution.

9. Connecticut is to take the appropriate steps to require marinas to install facilities to receive the sewage discharge from vessels for appropriate onshore treatment.

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APPENDIX A

CONVENTIONAL STEAM AND NUCLEAR ELECTRIC POWER PLANTS ON LONG ISLAND SOUND

TABLE A-1

CONVENTIONAL STEAM ELECTRIC POWER PLANTS ON LONG ISLAND SOUND[1]

Map No.	Name of Plant and Location	Installed Capacity (Megawatts) 1967	Planned Capacity[2] (Megawatts) 1970	1990
1	Long Island Lighting Company Port Jefferson Port Jefferson, Long Island	467	483	483
2	Long Island Lighting Company Northport Northport, Long Island	387	403	403
3	Long Island Lighting Company Glenwood Landing, Hempstead Harbor Glenwood Landing, Long Island	307	1567	1567
4	New York, New Haven & Hartford Railroad Cos Cob Cos Cob, Connecticut	27		
5	Hartford Electric Light Company Stamford Stamford, Connecticut	52		
6	Connecticut Light & Power Company Norwalk Harbor Norwalk, Connecticut	326		
7	General Electric Company Bridgeport Bridgeport, Connecticut	15		
8	United Illuminating Company Steep Point Bridgeport, Connecticut	156		
9	United Illuminating Company Bridgeport Harbor Bridgeport, Connecticut	261	655	1155
10	Connecticut Light & Power Company Devon, Housatonic River Devon, Connecticut	479	470	445

[1] See Figure A-1 for location of power plants.

[2] Recent controversies regarding thermal pollution have delayed construction of many planned stations.

TABLE A-1 (Cont'd)

CONVENTIONAL STEAM ELECTRIC POWER PLANTS ON LONG ISLAND SOUND

Map No.	Name of Plant and Location	Installed Capacity (Megawatts) 1967	Planned Capacity (Megawatts) 1970	1990
11	United Illuminating Company Derby, Housatonic River Derby, Connecticut	20		
12	United Illuminating Company English, Mill River New Haven, Connecticut	146		
13	Yale University Sterling New Haven, Connecticut	1.7		
14	Yale University Central New Haven, Connecticut	3.4		
15	United States Navy New London Sub Base New London, Connecticut	7		
16	Connecticut Light & Power Company Montville, Thames River New London, Connecticut	176	176	554
17	Charles Pfizer & Company Groton, Thames River Groton, Connecticut	11		

TABLE A-2

NUCLEAR ELECTRIC POWER PLANTS ON LONG ISLAND SOUND[1]

Map No.	Name of Plant and Location	Proposed Capacity (Megawatts)	Scheduled Completion Date
1	Long Island Lighting Company Shoreham Shoreham, Long Island, New York	849	1975
2	Long Island Lighting Company Lloyd Neck Lloyd Harbor, New York	1000	Mid 1980's
3	Consolidated Edison Company Welfare Island New York City (East River)	3000	Proposed
4	Consolidated Edison Company Davids Island (Ft. Slocum) New Rochelle, New York	4000	1978
*5	Connecticut Yankee Atomic Power Company Connecticut Yankee Haddam Neck, Connecticut	567	In Operation
6	Northeast Utilities Millstone Point - Unit #1		
7	Millstone Point - Unit #2 New London, Connecticut	828	1975

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[1] See Figure A-1 for location of Nuclear Power Plants.

*Not included in Summary, Section II. Plant is located on the Connecticut River 20 Miles from Long Island Sound.

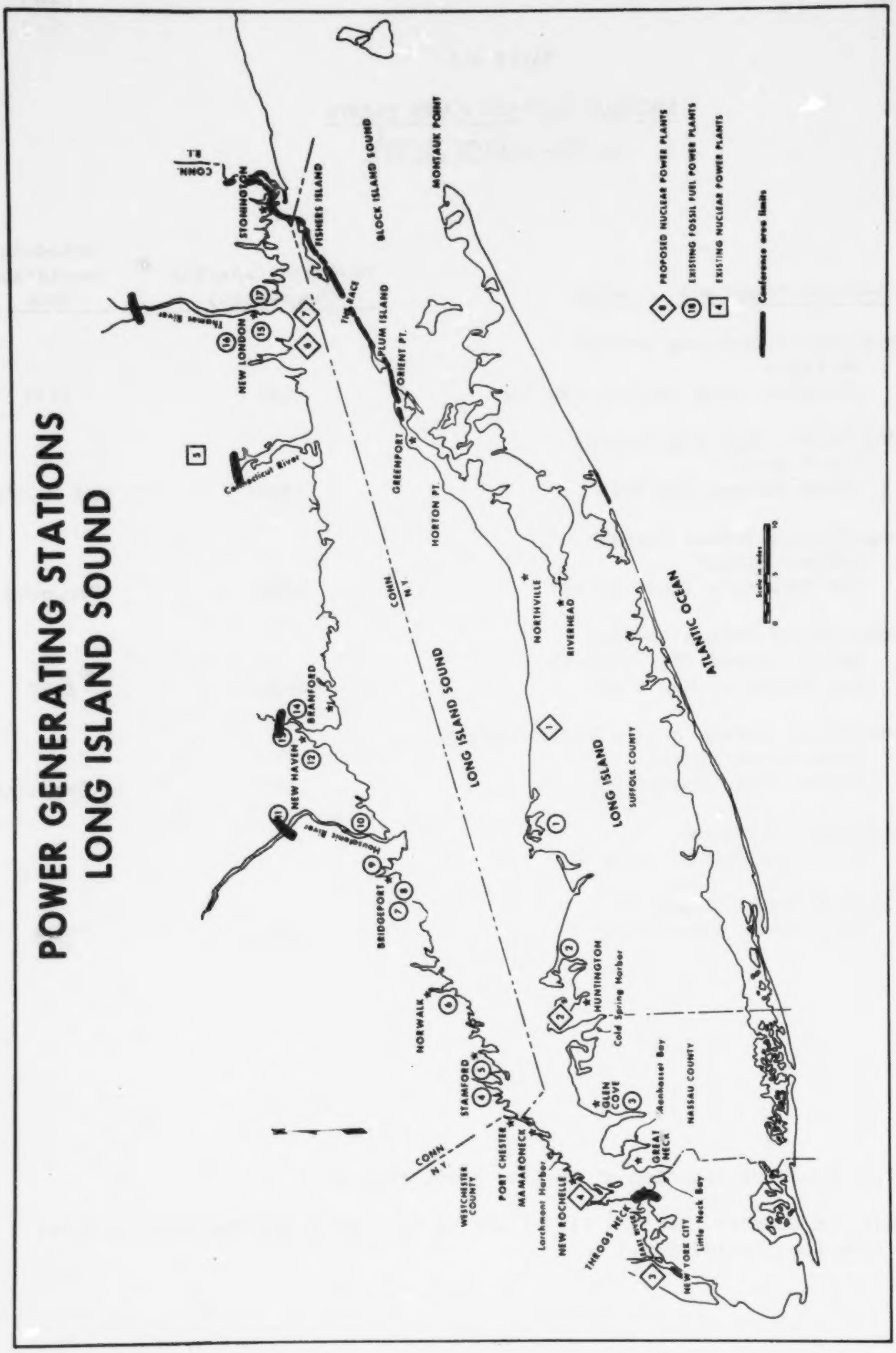
POWER GENERATING STATIONS
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
Thames River
NEW LONDON
THE RACE
PLUM ISLAND
ORIENT PT.
GREENPORT
Connecticut River
HORTON PT.
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
BRANFORD
NEW HAVEN
LONG ISLAND SOUND
LONG ISLAND
SUFFOLK COUNTY
Housatonic River
BRIDGEPORT
HUNTINGTON
Cold Spring Harbor
NORWALK
Manhasset Bay
NASSAU COUNTY
STAMFORD
GLEN COVE
GREAT NECK
CONN.
N.Y.
WESTCHESTER COUNTY
PORT CHESTER
MAMARONECK
Larchmont Harbor
NEW ROCHELLE
THROGS NECK
EAST RIVER
NEW YORK CITY
Little Neck Bay
PROPOSED NUCLEAR POWER PLANTS
EXISTING FOSSIL FUEL POWER PLANTS
EXISTING NUCLEAR POWER PLANTS
Conference area limits
Scale in miles
0
5
10

Figure A-1

APPENDIX B

WASTE SOURCE LISTING AND IMPLEMENTATION PLAN SCHEDULE

TABLE B-1
MUNICIPAL, PRIVATE AND INSTITUTIONAL WASTE SOURCES
LONG ISLAND SOUND

Map Ident. No.	Name	Receiving Waters	Estimated Population Served	Municipalities With Combined Sewers	Average Daily Flow (MGD)	Degree of Treatment	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
							Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
					NEW YORK										
1	Greenport	Long Island Sound	3,000		0.15	Primary	11/69	1					4/72		
2	Port Jefferson	Port Jefferson Harbor	9,000		0.80	Primary							4/72		
3	Kings Park Hospital	Smithtown Bay	9,500		1.00	Secondary							4/72		
4	Northport	Northport Harbor	3,000		0.15	Primary							4/72		
5	Huntington	Huntington Harbor	16,000		1.40	Secondary									
6	Quant. Biological Lab	Cold Spring Harbor	40		0.01	Secondary							4/72		
7	Oyster Bay	Oyster Bay Harbor	7,125		1.11	Secondary									
8	Glen Cove-Morgan Estates	Long Island Sound	250		-	Primary					7/71		4/72		
9	Glen Cove	Hempstead Harbor	25,000		4.20	Secondary					4/73		4/75		*
10	Roslyn	Hempstead Harbor	3,500		0.43	Secondary									
11	Port Washington	Manhasset Bay	36,415		2.52	Secondary									
12	Great Neck SD #1	Manhasset Bay	10,000		2.42	Secondary							12/68	1	*
13	Great Neck Village	Manhasset Bay	9,080		1.06	Secondary							6/71		*
14	Belgrave SD	Little Neck Bay	15,000		1.42	Secondary	-	-			7/71		7/72		*
15	Orchard Beach, NYC	Long Island Sound	Seasonal		-	Septic Tank							4/72		
16	City-Hart Island, NYC	Long Island Sound	6,000	X	1.00	Primary							4/72		
17	New Rochelle	Long Island Sound	71,390		10.60	Primary	10/69	1	3/70		2/72		12/74		*
18	Mamaroneck	Long Island Sound	167,000		14.40	Primary	-		-		-		4/72		
19	Shenrock Shore Club, Rye	Long Island Sound	Seasonal			Septic Tank							4/72		
20	American Yacht Club, Rye	Long Island Sound	Seasonal			Septic Tank							4/72		
21	Blind Brook	Long Island Sound	59,100	X	2.50	Primary	4/69	1	3/70		3/72		8/73		*
22	Port Chester	Byram River-Port Chester Harbor	23,800	X	4.20	Primary	10/69	1	4/70		3/72		9/73		*

TABLE B-1
MUNICIPAL, PRIVATE AND INSTITUTIONAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

Map Ident. No.	Name	Receiving Waters	Estimated Population Served	Municipalities With Combined Sewers	Average Daily Flow (MGD)	Degree of Treatment	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
							Submit Preliminary Plans	STATUS	Submit Final Plans	STATUS	Start Construction	STATUS	Complete Construction	STATUS	
				CONNECTICUT											
23	Greenwich	Greenwich Harbor	42,200		4.60	Secondary									
	Byram River Interceptor												3/71		*
	Belle Haven Interceptor								11/69	1	1/70	1	1/71		*
24	Stamford	Stamford River	92,700		9.20	Primary	7/67	1	4/68	1	2/69	1	7/70		
	Interceptors						7/67	1	4/68	1	2/69	1	7/70		
25	Stamford-Indian Ridge	Stamford River	500	X	0.05	Secondary									
26	Darien	Long Island Sound	6,300		0.70	Primary	12/67	1	1/68		9/68		7/69		
27	Norwalk	Norwalk River	55,000	X	9.00	Primary	7/67	1	5/68	1	2/69		2/70		
	Sewers						6/68	1	4/69		12/69		4/71		
28	Norwalk (6th Tax Dist.)	Norwalk River		X	-	Septic Tank Sand Filter							9/71		*
29	Westport	Saugatuck River	48,000		0.50	Secondary	12/67	1	7/68	1	3/69		3/70		
30	Fairfield	Long Island Sound	30,000		3.75	Primary	2/68	1	4/68	1	12/68		10/69		
31	Bridgeport-West Side	Cedar Creek	90,000	X	24.00	Primary	9/67	1	1/69	1	6/69	1	6/71		
32	Bridgeport-East Side	Bridgeport Harbor	40,000	X	11.00	Primary	9/67	1	1/69	1	6/69	1	1/71		
33	Stratford	Housatonic River	40,000		6.00	Primary	9/67	1	6/68	1	2/69		12/69		
34	Shelton-Main	Housatonic River	10,000	X	1.00	Primary	11/67	1	7/68	1	4/69		2/70		
35	Shelton-Route 8	Housatonic River	-		1.00	Secondary	8/67	1	4/67	1	4/67	1	11/67	1	
36	Derby	Housatonic River	8,500	X	0.85	Primary	12/67	1	9/68		6/69		4/70		
37	Milford (Devon)	Housatonic River	-		-	Individual	6/67	1	7/67	1	1/68	1	5/69		
38	Milford (Town Meadows)	Milford Harbor	10,000		1.15	Secondary									
39	Milford (Harbor Plant)	Milford Harbor	4,000		0.60	Secondary									
40	Milford (Gulf Pond Plant)	Gulf Pond	6,000		1.40	Secondary									
41	West Haven	New Haven Harbor	40,000		5.00	Primary	12/67	1	12/68	1	8/69		6/70		
42	New Haven-Boulevard Plant	New Haven Harbor	76,600	X	11.30	Primary	7/68	1	12/69		11/70		11/72		

TABLE B-1
MUNICIPAL, PRIVATE AND INSTITUTIONAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

Map Ident. No.	Name	Receiving Waters	Estimated Population Served	Municipalities With Combined Sewers	Average Daily Flow (MGD)	Degree of Treatment	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/ Submit Preliminary Plans	STATUS	Submit Final Plans	STATUS	Start Construction	STATUS	Complete Construction	STATUS
43	New Haven-East St. Plant	New Haven Harbor	67,500	X	11.20	Primary	7/68	1	12/69		11/70		11/72	
44	New Haven-East Shore Plant	New Haven Harbor	34,900	X	6.00	Primary	7/68	1	12/69		11/70		11/72	
45	North Haven	Quinnipiac River	16,000	X	5.00	Secondary	3/68	1	7/68	1	3/69	1	2/70	1
46	East Lyme-Rocky Neck State Park	Long Island Sound	-		0.02	Primary	10/67	1	5/68	1	12/68	1	6/69	1
47	East Lyme-Niantic St.Farm	Bride Brook	-		0.03	Secondary			6/68		2/69		10/69	
48	East Lyme-Camp Dempsey	Niantic River	-		0.32	Primary	9/67	1	3/68	1	11/68	1	6/69	1
49	Waterford-Seaside St. San.	Long Island Sound	-		0.03	Primary			4/68	1	12/68	1	8/69	1
50	New London-Trumbull St.Plant	Thames River	32,700		3.20	Primary	10/67	1	9/68		7/69		7/70	
51	New London-Riverside Plant	Thames River	2,600		0.20	Primary	10/67	1	6/68		4/69		10/69	
52	Waterford	Thames River	-		-	Individual	5/68	1	6/69		6/70		6/71	
53	Montville	Thames River	-		-	Individual	10/67	1	7/68		6/69		8/70	
54	Norwich	Shetucket & Thames R.	24,000	X	1.50	Primary	12/67	1	12/68	1	10/69		10/70	
	Yantic Interceptor		4,500				12/67	1	6/68	1	6/69	1	3/70	
	Shetucket Interceptor						12/67	1	6/68		6/69		3/70	
	La. Hill & Thames Inter.						12/67	1	11/68	1	6/69		3/70	
55	Ledyard-Lifetime Homes	Williams Brook	-		0.08	Secondary	5/68	1	2/69	1	4/69	1	5/69	
56	Groton City-Fort St. Plant	Thames River	10,000		1.30	Primary	10/67	1	10/68	1	9/69	1	9/70	
57	Groton City-Branford Court	Bakers Cove	800		0.03	Secondary								
58	Groton Town-Fort Hill Homes	Mumford Cove	4,800		0.30	Secondary			7/68	1	6/69		10/70	
	Interceptor		-		-			1	7/68	1	6/69		10/70	
59	Stonington-Mystic	Mystic River	-		0.05	Individual	8/67	1	3/68	1	1/69	1	4/70	
60	Stonington-Boro	Stonington Harbor	-		0.12	Individual	8/67	1	9/68		5/69		8/70	

a/ Under the "Status" column, a "1" indicates the step has been tatus of Compliance as of March 15, 1971 for Connecticut Sources and October 30, 1970 for New York Sources.

b/ An asterisk "*" at the right margin of the Implementation Schedule established.

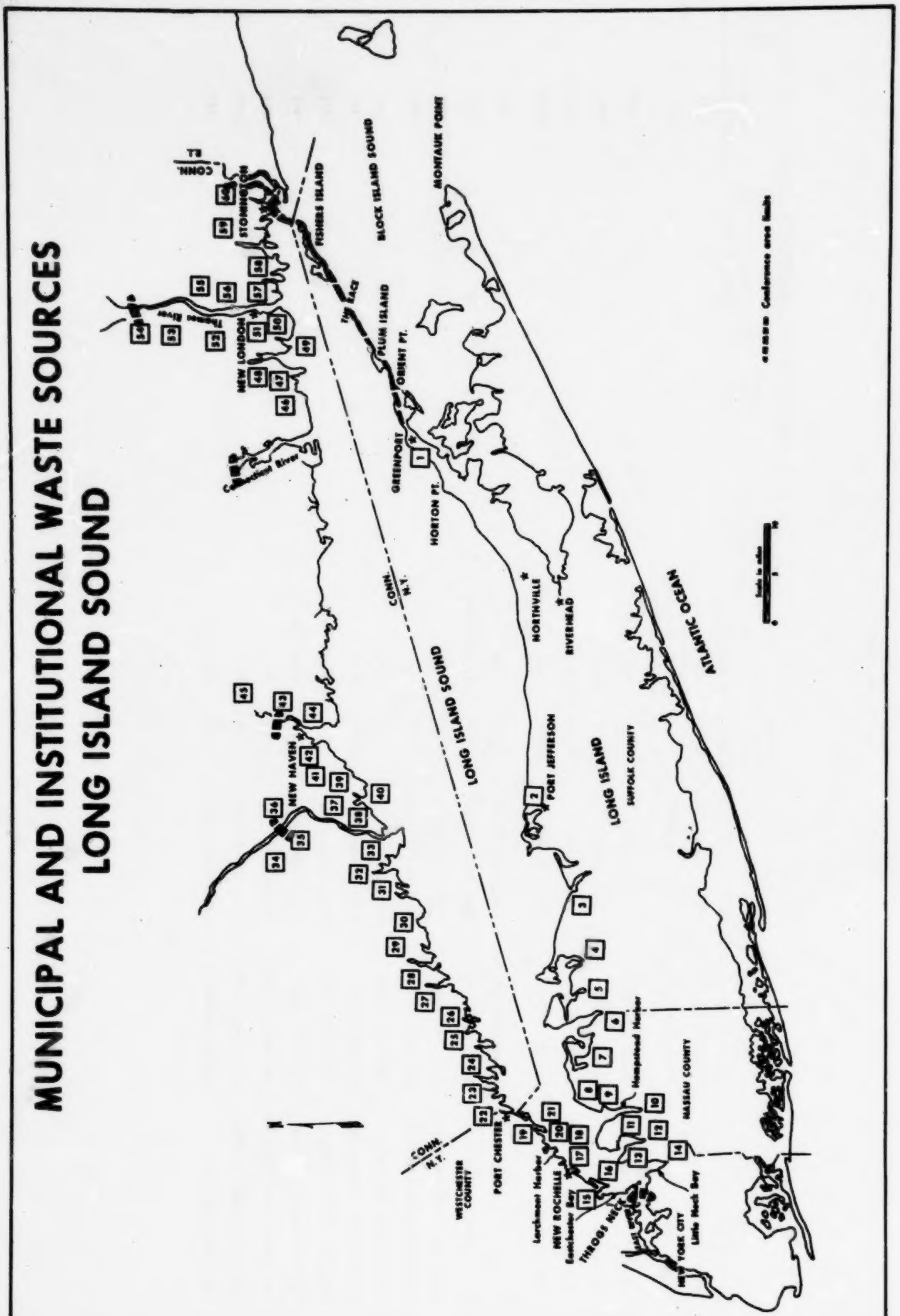
MUNICIPAL AND INSTITUTIONAL WASTE SOURCES
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
THE RACE
PLUM ISLAND
ORIENT PT.
NEW LONDON
Thames River
Connecticut River
GREENPORT
HORTON PT.
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
NEW HAVEN
LONG ISLAND SOUND
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
Hempstead Harbor
NASSAU COUNTY
CONN.
N.Y.
WESTCHESTER COUNTY
PORT CHESTER
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
NEW YORK CITY
Little Neck Bay
Conference area limits
Scale in miles

Figure B-1

TABLE B-2
FEDERAL WASTE SOURCES
LONG ISLAND SOUND

Map Ident. No.	Installation	Location	Receiving Waters	Average Daily Flow (GPD)	Type of Treatment	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE: Submit Preliminary Plans	STATUS	Submit Final Plans	STATUS	Start Construction	STATUS	Complete Construction	STATUS
1a	Animal Disease Lab	Plum Island, N.Y.	Block Island Sound	46,000	Chlorination Septic Tank							1972	
1	Animal Disease Lab	Plum Island, N.Y.	Long Island Sound	55,000	Grinding Neutralization Sterilization							1972	
2	U.S. Air Force Plant #43	Stratford, Conn.	Housatonic River	576,000	Secondary	7/71		12/71		2/72		10/72	
3	New London Sub Base	Groton, Conn.	Thames River	1,300,000	Primary							9/71	
4	U. S. S. Fulton	Groton, Conn.	Thames River	40,000	None							9/71	
5	Navy Barges	Groton, Conn.	Thames River	40,000	Pump to Groton Town System							12/70	
6	Little Gull Is. Lighthouse	Little Gull Is. N.Y.	Long Island Sound	300	None							1972	
7	Plum Island Lighthouse	Plum Island, N.Y.	Long Island Sound	300	Septic Tank							1972	
8	Stratford Shoal Lighthouse	Port Jefferson, N.Y.	Long Island Sound	200	None							1972	
9	Execution Rocks Lighthouse	New Rochelle, N.Y.	Long Island Sound	400	None							1972	
10	Greens Ledge Lighthouse	Northport, N.Y.	Long Island Sound	300	None							1972	
11	Penfield Reef Lighthouse	Bridgeport, Conn.	Long Island Sound	300	None							1972	
12	Stratford Point Lighthouse	Stratford, Conn.	Long Island Sound	300	Septic Tank							1972	
13	Falkner Island Lighthouse	Guilford, Conn.	Long Island Sound	400	Septic Tank							1972	
14	New London Depot Lighthouse	New London, Conn.	Thames River	150	None							1972	
15	New London Ledge Lighthouse	New London, Conn.	Long Island Sound	300	None							1972	
16	Race Rock Lighthouse	Fishers Island, N.Y.	Long Island Sound	300	None							1972	

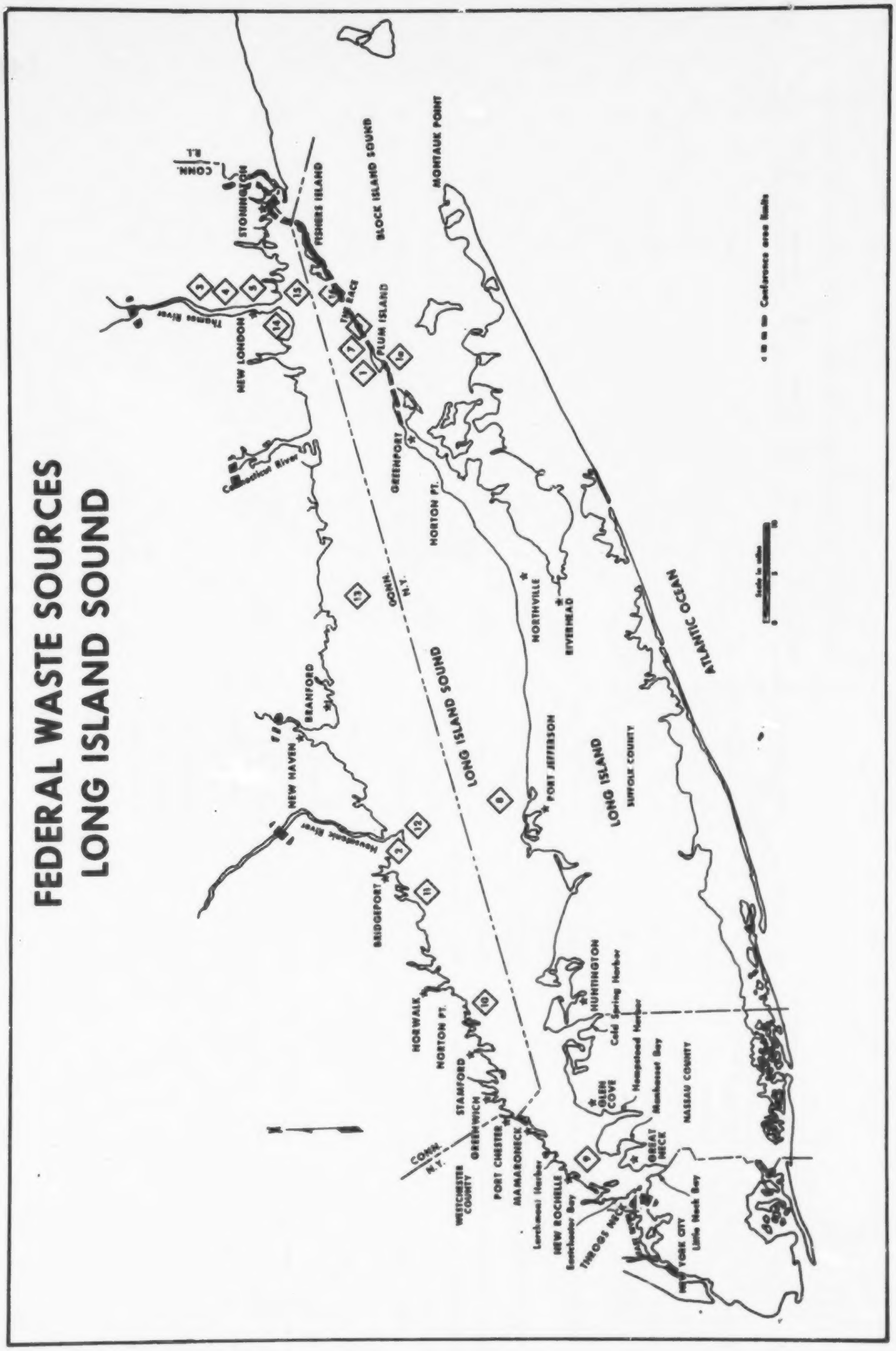
FEDERAL WASTE SOURCES
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
NEW LONDON
Thames River
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
THE RACE
PLUM ISLAND
Connecticut River
GREENPORT
NORTON PT.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
CONN.
N.Y.
BRANFORD
NEW HAVEN
LONG ISLAND SOUND
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
Housatonic River
BRIDGEPORT
HUNTINGTON
Cold Spring Harbor
NORWALK
NORTON PT.
STAMFORD
GREENWICH
PORT CHESTER
MAMARONECK
Larchmont Harbor
NEW ROCHELLE
Eastchester Bay
THROGS NECK
WESTCHESTER COUNTY
CONN.
N.Y.
GLEN COVE
Hempstead Harbor
Manhasset Bay
GREAT NECK
NASSAU COUNTY
NEW YORK CITY
Little Neck Bay
Scale in miles
Conference area limits
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Figure B-2

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND

						FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
					NEW YORK									
1	Long Island Lighting Co.	Port Jefferson		Power	Port Jefferson Harbor							4/72		*
2	Shell Oil Co.	Mount Vernon		Oil	Hutchinson River									
3	Metropolitan Oil Co.	Mount Vernon		Oil	Hutchinson River									
4	Russell, Burdsall & Ward	Port Chester	800	Nuts & Bolts	Byram River	6/69	1	3/70		8/70		8/71		*
5	Krystinel Corp.	Port Chester	70	Ferrites	Byram River			11/69	1	1/70	1	7/70	1	*
					CONNECTICUT									
6	GAF Corporation	Greenwich	814	Felt-Wool and Synthetic Filters	Byram River	6/68	1	3/69	1	6/69		5/70		
				(Sanitary)						6/68		5/70		
7	Globe Slicing Machine Co., Inc.	Stamford	150	Food Slicers and Choppers	Stamford Harbor	9/68	1	1/69	1	4/69		11/69		
8	Machlett Laboratories, Inc.	Stamford	1,600	X-Ray Tubes	Noroton River	3/66	1	2/68	1	4/68	1	12/68	1	
9	Laminated Shim Co., Inc.	Stamford	250	Laminated Stampings	Stamford Harbor							7/68	1	
10	Hoffman Fuel Co., Inc.	Stamford		-	Stamford Harbor	1/70	1	6/70		9/70		3/71		*
11	Carro Copper & Brass Co.	Stamford	300	Copper & Brass Products	Stamford Harbor	7/68	1	12/68	1	3/69	1	12/69	1	c/
				(Sanitary)								12/69	1	c/
12	National Dairy Products Corp. (Sealtest)	Stamford		Dairy Products	Stamford Harbor							12/70		
13	Devine Brothers	Norwalk		-	Norwalk River	9/68	1	1/69	1	3/69		8/69		
14	King Organic Chemical Co.	Norwalk	10	Rubber-Plasticisers	Norwalk River									*
15	Norwalk Asphalt	Norwalk		-	Norwalk River	9/68	1	1/69	1	3/69	1	8/69	1	
16	Caldor, Inc.	Norwalk		(Sanitary)	Norwalk Harbor							4/71		
17	Fairfield Investors, Inc.	Norwalk		(Sanitary)	Norwalk Harbor							4/71		
18	Rowayton Market	Norwalk		(Sanitary)	Norwalk Harbor							9/71		
19	Rowayton Pharmacy	Norwalk		(Sanitary)	Norwalk Harbor							9/71		
20	Soybel Realty Co.	Norwalk		(Sanitary)	Norwalk Harbor							9/71		

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/ Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status
21	Stephanak Brothers, Inc.	Norwalk		(Sanitary)	Norwalk Harbor							9/71	
22	Wash-A-Way Car Washers	Westport		Auto Washing	Saugatuck River								
23	Fermont Div. Dynamics Corp.	Bridgeport	250	Generator Sets-(San.)	Bridgeport Harbor							6/70	
24	Carpenter Steel	Bridgeport	1,000	Alloy & Stainless Steel	Bridgeport Harbor	12/68	1	4/69	1	7/69	1	4/70	
25	Bullard Company	Fairfield	2,000	Machinery (Sanitary)	Bridgeport Harbor	3/68	1	12/68	1	3/69	1	12/69 6/68	1 1
26	Clark Metal Products, Inc.	Fairfield	125	Small Metal Products	Bridgeport Harbor	3/68	1	12/68	1	3/69		12/69	
27	Wakeman Memorial, Inc.	Fairfield		(Sanitary)	Bridgeport Harbor							10/69	
28	C. O. Jelliff Mfg. Co.	Fairfield	200	Woven Wire Mesh	Bridgeport Harbor	3/68	1	12/68		3/69		12/69	
29	Electric Storage Battery Co.	Fairfield	108	Automotive Storage Batteries	Bridgeport Harbor	6/68	1	2/69	1	4/69	1	4/70	1
30	Foremost-McKesson Lab	Fairfield	500	Pharmaceuticals	Bridgeport Harbor								
31	Handy & Harman	Fairfield	800	Precious Metals	Bridgeport Harbor			3/69	1	6/69	1	3/70	1
32	Parker's Dairy Co.	Trumbull	15	Dairy Products	Bridgeport Harbor	9/68		2/69		5/69		12/69	
33	Hull Dye & Print Works, Inc.	Derby	200	Textile Dying & Finishing (Sanitary)	Housatonic River	11/67	1	7/68	1	9/68	1	4/69 10/67	
34	The United Illuminating Co.	Derby		Electricity-(Sanitary)	Housatonic River							4/70	1
35	W. E. Bassett Co.	Derby	180	Manicure Implements (Sanitary)	Housatonic River	1/68	1	3/68	1	5/68		12/68 10/67	 1
36	Apex Tool & Cutter Co., Inc.	Shelton	100	Tools, Holders & Milling Cutters (Sanitary)	Housatonic River	9/68	1	4/69	1	6/69	1	12/69 4/68	1 1
37	B. F. Goodrich Sponge Products	Shelton	2,000	Industrial Cellular Rubber (Sanitary)	Housatonic River	1/69	1	5/69	1	7/69		4/70 9/68	 1
38	Chromium Process Co.	Shelton	225	Electroplates (Sanitary)	Housatonic River			12/67	1	3/68	1	12/68 11/67	 1
39	Driscoll Wire Co.	Shelton	75	Low Carbon Steel Wire (Sanitary)	Housatonic River	9/68	1	4/69	1	6/69		12/69 4/69	 1
40	Empire State Novelty Corp.	Shelton		- (sanitary)	Housatonic River	9/68	1	4/69	1	6/69	1	12/69 4/68	1 1

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

						FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
41	Star Pin Co.	Shelton	160	Hairpins	Housatonic River			9/68	1	1/69		12/69		
42	Wire Novelty Mfg. Co.	Shelton	190	Wire & Metal Specialities (Sanitary)	Housatonic River	9/68	1	4/69	1	4/69	1	12/69 4/68	 1	
43	Scotch Wash	Shelton		-	Housatonic River	8/69	1	11/69	1	3/70	1	6/70	1	*
44	East Village Land Co.	Shelton		-	Housatonic River	8/69	1	11/69	1	3/70	1	6/70	1	*
45	Chemical Plating Co.	Stratford	55	Electroplating	Housatonic River	8/68	1	1/69		4/69		1/70		
46	Contract Plating Co.	Stratford	130	Metal Finishes	Housatonic River	8/68	1	1/69	1	4/69	1	1/70		
47	Ross & Roberts	Stratford	250	Vinyl & Polyethylene Film & Sheeting	Housatonic River	12/68	1	5/69	1	8/69	1	6/70	1	
48	Raybestos-Manhattan, Inc.	Stratford	1,250	Asbestos & Metallic Brake Linings	Housatonic River	1/69	1	5/69	1	8/69	1	12/69	1	
49	Tilo Co., Inc.	Stratford	1,500	Asphalt & Asbestos	Housatonic River	7/68	1	12/68	1	4/69	1	1/70	1	
50	Bridgeport Rolling Mills	Stratford	130	Aluminum, Brass & Bronze	Housatonic River	8/68		1/69		4/69		1/70		
51	Chatham Associates	Stratford		(Sanitary)	Housatonic River							4/70		
52	Sikorsky Aircraft	Stratford	9,832	Helicopters-(Sanitary)	Housatonic River							12/69		
53	Branch Motor Express Co.	Orange		-	Milford Harbor	6/68	1	12/68	1	3/69	1	9/69	1	
54	National Screw Products Co., Inc.	Orange		-	Milford Harbor							6/68	1	
55	Adley Express Corp.	Orange		-	Milford Harbor	6/70		6/70		9/70		3/71		*
56	Syndicated Realty	Orange	50	-	Milford Harbor	6/68	1	1/69	1	3/69	1	12/69	1	
57	Huyck Corp.	Milford	50	Paper Making Machinery	Milford Harbor	1/68	1	4/68	1	7/68	1	12/68	1	
58	Milford Rivet & Machine Co.	Milford	475	Tubular Rivets	Milford Harbor	11/67	1	2/68	1	4/68	1	10/68	1	
59	Robertshaw Control Co.	Milford	493	Metallic Bellows & Bellows Assemblies	Milford Harbor	3/68	1	10/68	1	1/69	1	12/69	1	
60	U. S. Electric Motors, Div. Emerson Electric Mfg. Co.	Milford	1,025	Electric Motors	Milford Harbor	10/68	1	3/69	1	6/69		6/70		
61	Waterbury Lock & Specialty Company	Milford	300	Locks, Cigarette Lighters	Milford Harbor	4/68		7/68		9/68		3/69		

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
						Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
62	Secondi Brothers Service Station	Milford		-	Milford Harbor	1/70	1	2/70		5/70	1	12/70		*
63	The Rex Company	Milford			Milford Harbor	5/70		7/70		9/70		12/70		*
64	Eldorado Trans. Co.	Milford			Milford Harbor	5/70		7/70		9/70		12/70		*
65	Volvo City	Milford		Auto Dealer	Milford Harbor									
66	American Powdered Metals	North Haven	200	Powdered Metal Parts	Quinnipiac River	10/68	1	2/69	1	5/69	1	12/69	1	
67	Burndy Corp.	North Haven	200	Electrical Connectors	Quinnipiac River			1/69	1	4/69	1	12/69	1	
68	City Printing Co.	North Haven	75	Printing & Lithography	New Haven Harbor			12/67	1	3/68	1	6/68	1	
69	Humphrey Chemicals	North Haven	25	Organic Chemicals	Quinnipiac River	1/68	1	7/68		10/68		5/69		
70	Platt & Labonia Co.	North Haven	60	Sheet Metal Fabricators	Quinnipiac River			1/69		4/69		12/69		
71	Axton-Cross Co.	North Haven	60	Industrial Chemicals	Quinnipiac River									
72	Pratt & Whitney Aircraft (United Aircraft)	North Haven	2,500	Aircraft & Marine Engines	Quinnipiac River	11/68	1	11/69	1	3/70		6/71		
73	Union Carbide, Linde Air Products Co., Inc.	North Haven	15	Compressed Gases	Quinnipiac River	8/68	1	12/68	1	3/69	1	9/69	1	
74	O. F. Mossberg & Sons	North Haven	300	Firearms	New Haven Harbor	6/69	1	11/69		1/70		6/70		*
75	Upjohn Co., Carwin Organic Chemicals	North Haven	200	Synthetic Organic Chemicals	Quinnipiac River	8/69	1	2/70	1	5/70		11/70		
76	Upjohn Co., Carwin Organic Chemicals	North Haven	200	Synthetic Organic Chemicals	Quinnipiac River	2/68	1	5/68	1	7/68	1	2/69	1	
77	Vincent Buonocore & Sons	North Haven	45	Wines	New Haven Harbor	9/69	1	3/70		5/70		12/70		*
78	Drabkin Family Spray Trust	North Haven			New Haven Harbor	1/71		6/71		8/71		3/72		*
79	Circuit-Wise, Inc.	North Haven	26	Printed Circuit Boards	New Haven Harbor	1/71		6/71		8/71		3/72		*
80	C. W. Blakeslee & Sons	New Haven		General Contracting	New Haven Harbor	3/68	1	6/68	1	8/68	1	12/68	1	
81	Federal Paper Board Co.	New Haven	750	Folding Boxboard	Mill River	7/68	1	12/68		3/69		3/70		

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

						FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
82	Humble Oil	New Haven		-	New Haven Harbor	11/68	1	3/69	1	6/69	1	12/69	1	
83	Mite Corp.	New Haven	300	Electrical Equipment	West River	11/68	1	3/69		6/69		12/69		
84	New Haven Board & Carton	New Haven	500	Folding Boxboard	Mill River	7/68	1	12/68	1	3/69		3/70		
85	Seamless Rubber Co., Div. Rexall Drug & Chemical Co.	New Haven	900	Rubber Sundries	New Haven Harbor	11/68	1	3/69		6/69		12/69		
86	U. S. Steel, American Steel & Wire Div.	New Haven	300	Hot Rolled & Cold Finished Bars	Quinnipiac River	8/68	1	3/69	1	6/69		3/70		
87	New Haven Malleable Iron Co.	New Haven		(Sanitary)	New Haven Harbor							6/68		
88	Textron Electronics	New Haven		-	New Haven Harbor	5/69	1	10/69		2/70		12/70		*
89	Penn Central Co., Union St.	New Haven		-	New Haven Harbor			5/70		10/70		10/71		*
90	Penn Central Co., Cedar Hall	New Haven		-	Quinnipiac River	3/70		5/70		10/70		10/71		*
91	Himmel Brothers	Hamden	70	Metal Moldings	Whitney Lake	6/68	1	1/69	1	3/69	1	2/70	1	
92	Giering Metal Finishing, Inc.	Hamden	50	Metal Finishings	New Haven Harbor	7/68	1	2/69	1	4/69		3/70		
93	South Conn. Gas Co.	New Haven		(Sanitary)	New Haven Harbor							7/72		
94	The United Illuminating Co.	New Haven		Electricity-(Sanitary)	Mill River							7/72		
95	Coremco Corp.	West Haven	625	Tallow & Grease Hides	New Haven Harbor	9/69	1	3/70		5/70		12/70		*
96	Car Washers, Inc.	West Haven		Auto Washing	New Haven Harbor	2/70		2/70		5/70		10/70		*
97	American Buckle Co.	West Haven	20	Clothing Buckles	New Haven Harbor	12/69	1	2/70	1	6/70	1	12/70	1	*
98	Armstrong Rubber Co.	West Haven	1,471	Tires & Tubes	New Haven Harbor	1/71		6/71		9/71		4/72		*
99	Arcola Wire Co.	Branford	11	Round Aluminum Wire and Rod	Branford Harbor	8/68	1	12/68	1	4/69		12/69		
100	D. J. King	Branford			Branford Harbor	8/68	1	1/69	1	3/69		9/69		

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

						FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/								
Map Ident. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status	
101	Carroll Johnson	Branford		(Sanitary)	Branford Harbor			4/68		6/68		8/68		*
102	Mr. & Mrs. George Hagret	Branford		(Sanitary)	Branford Harbor			4/68		6/68		8/68		*
103	Brandon Company	Branford		(Sanitary)	Branford Harbor							12/68	1	
104	Echlin Mfg. Co.	Branford	550	Automobile Parts	Branford Harbor	6/69	1	11/69	1	4/70	1	9/70	1	*
105	Atlantic Wire Co.	Branford	250	Iron & Steel Wire	Branford Harbor	11/68	1	7/69	1	9/69	1	4/70		*
106	Summit House Restaurant	Branford		(Sanitary)	Branford Harbor							12/68	1	
107	Malleable Iron Fittings Co.	Branford	622	Metal Fabricating (Sanitary)	Branford Harbor	12/69	1	3/70		6/70		10/70 1/70	 1	* *
108	Olin Corporation	Branford			Branford Harbor									
109	Maple Shade Farm, Inc.	Guilford	100	Dairy Products	Guilford Harbor			9/67		10/67		4/68		
110	Waverly Chemical Co., Inc.	Guilford	5	Magnesium	Guilford Harbor	12/68	1	12/68	1	4/70		6/70		*
111	Madison Laundermat	Madison		-	Guilford Harbor			2/68	1	4/68	1	7/68	1	
112	Chesebrough-Ponds, Inc.	Clinton	1,450	Pharmaceuticals	Clinton Harbor	5/68	1	11/68		2/70		10/70		
113	Universal Wire of Bostitch Division of Textron, Inc.	Clinton	100	Wire Drawings	Clinton Harbor	5/69	1	2/70	1	7/70		4/71		*
114	Verplex Company	Essex	200	Lampshades	Connecticut River	6/68	1	9/68	1	11/68	1	3/69	1	*
115	Chas. Pfizer & Co., Inc.	Groton	2,000	Pharmaceuticals	Thames River	12/67	1	5/68	1	8/68		8/69		
116	General Dynamics Corp. Electric Boat Div.	Groton	18,000	Ships-(Sanitary)	Thames River			6/69	1	8/69	1	11/69	1	*
117	Compass, Inc.	Groton	5	Newspaper-(Sanitary)	Thames River							11/70		
118	Fusconi Cleaners & Tailors	Groton		-	Thames River							9/71		*
119	Lifetime Homes, Inc.	Ledyard		(Sanitary)	Thames River	5/68	1	9/68		1/69		4/69		c/
120	Campanelli Corp.	Ledyard		-	Thames River			8/68	1	10/68	1	4/69	1	*

TABLE B-3
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND (Cont'd.)

						FEDERALLY APPROVED IMPLEMENTATION SCHEDULE a/, b/							
Map dent. No.	Name	Location	Number of Employees	Type of Product	Receiving Waters	Submit Preliminary Plans	Status	Submit Final Plans	Status	Start Construction	Status	Complete Construction	Status
121	Continental Can Co.	Montville	174	Metal Cans (Sanitary)	Thames River	2/69 4/68		10/69 6/68		4/70 9/68		4/71 12/68	
22	Federal Paper Board Co.	Montville	100	Folding Boxboards	Oxoboxo Brook	2/69		10/69		4/70		4/71	
23	Robertson Paper Box Co.	Montville	400	Folding Boxboards	Oxoboxo Brook	2/69	1	10/69		4/70		4/71	c/
24	Thomas G. Faria Corp.	Montville	130	Automotive & Marine Instruments	Thames River							12/71	
25	Finley Screw Machine Prod.	Montville	5	Screw Machine Prod.	Thames River							12/71	
26	Conn. Light & Power Co.	Montville		Power	Thames River								
27	American Velvet Co. (A. Wimpfheimer & Brothers, Inc.)	Stonington	350	Velvet & Plushes (Sanitary)	Stonington Harbor							12/70 12/70	
28	Monsanto Company	Stonington	100	Plastic Bottles (Sanitary)	Stonington Harbor							12/70 12/70	
29	Douglas Randall, Inc. (Subsid. of Walter Kidde & Co., Inc.)	Stonington	250	Electronic Equipment	Stonington Harbor							12/70	
130	Carole Realty	Stonington		-	Fishers Island Sound							12/70	
31	Micro Leather	Stonington		Leather Products	Fishers Island Sound							12/70	
32	Aaron Levine	Stonington		-	Fishers Island Sound							12/70	
33	Russell A. Linihan	Stonington		-	Fishers Island Sound							12/70	
34	Cooper Laboratories (The Packer Co. Div.)	Stonington	20	Soaps & Shampoos (Sanitary)	Mystic River							12/70 12/70	
35	Puritan Laundry	Stonington	15	Laundry	Mystic River							12/70	
36	Sirtex Printing Co.	Stonington	20	Textile Printing (Sanitary)	Mystic River	3/68		8/68 3/68		11/68 6/68		9/69 9/68	
37	General Dynamics Corp.	Stonington	18,000	Ship Construction	Mystic River							12/70	

a/ Under the "Status" column, a "1" indicates the step has been completed, a blank indicates it has not been completed. Status of Compliance as of March, 1971.

b/ An asterisk "*" at the right margin of the Implementation Schedule indicates it is a State schedule with no Federal schedule established.

c/ No longer discharging wastewater.

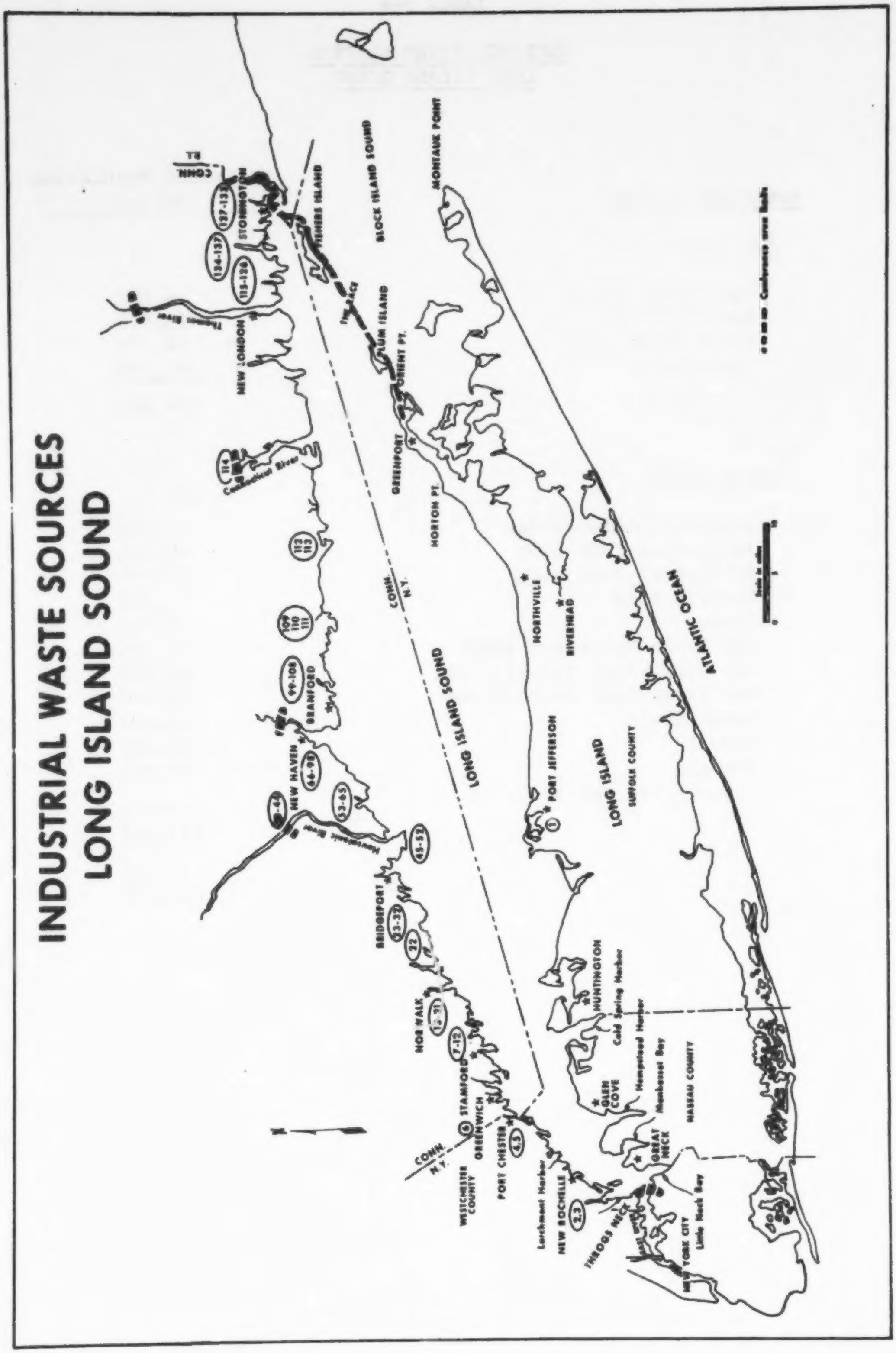
INDUSTRIAL WASTE SOURCES
LONG ISLAND SOUND
CONN.
R.I.
STONINGTON
127-133
134-137
115-126
Thames River
NEW LONDON
FISHERS ISLAND
BLOCK ISLAND SOUND
MONTAUK POINT
The RACE
PLUM ISLAND
ORIENT PT.
GREENPORT
HORTON PT.
Connecticut River
114
112
113
109
110
111
99-108
BRANFORD
NEW HAVEN
66-98
53-65
Housatonic River
45-52
BRIDGEPORT
23-37
22
NORWALK
13-21
7-12
STAMFORD
6
GREENWICH
CONN.
N.Y.
WESTCHESTER COUNTY
PORT CHESTER
4,5
Larchmont Harbor
NEW ROCHELLE
2,3
THROGS NECK
NEW YORK CITY
Little Neck Bay
GREAT NECK
Manhasset Bay
Hempstead Harbor
GLEN COVE
Cold Spring Harbor
HUNTINGTON
NASSAU COUNTY
1
PORT JEFFERSON
LONG ISLAND
SUFFOLK COUNTY
LONG ISLAND SOUND
CONN.
N.Y.
NORTHVILLE
RIVERHEAD
ATLANTIC OCEAN
Scale in miles
0
5
10
Conference area limits

Figure B-3

TABLE B-4

COMBINED SEWER SYSTEMS
LONG ISLAND SOUND

Municipal System	Estimated Population Served
New York	
City-Hart Island	6,000
Port Chester	23,800
Blind Brook	59,100
Mamaroneck	167,000
	255,900
Connecticut	
Stamford-Indian Ridge	500
Bridgeport-East Side	40,000
Bridgeport-West Side	90,000
Shelton-Main	10,000
Derby	8,500
New Haven-Boulevard Plant	76,600
New Haven-East Street Plant	67,500
New Haven-East Shore Plant	34,900
North Haven	16,000
Norwich	24,000
Norwalk	55,000
Norwalk-6th Tax District	-
	423,000
	678,900

APPENDIX C

LETTER FROM LONG ISLAND OYSTER FARMS INC., NEW HAVEN, CONNECTICUT AND STATE OF CONNECTICUT SHELL FISH COMMISSION, MILFORD, CONNECTICUT REGARDING ECONOMIC LOSS TO SHELLFISH INDUSTRY AS RESULT OF WATER POLLUTION.

C O P Y

LONG ISLAND OYSTER FARMS, INC.
610 Quinnipiac Avenue
New Haven, Connecticut 06513
203-467-6384

February 10, 1971

Mr. Edward Wong
Federal Water Quality Administration
240 Highland Avenue
Needham, Massachusetts

Dear Ed,

In reference to your telephone inquiry of yesterday regarding the decline in the Connecticut, New York oyster industry over the past fifty years, I offer the following:

In 1920 there were more than sixty planters all of them dependent on Connecticut seed. These varied in size from the companies producing a quarter million bushels yearly of market stock down to the individual producing one or two thousand bushels per year.

The average yearly production of market oysters at that time was about 1,500,000 bushels down from double that production at the beginning of the century.

Today there are only four planters left that are doing any substantial amount of business. An estimate of their total sales in 1970 is 140,000 bushels, which at an average price of $14.00 per bushel would amount to a little under two million dollars.

If 1920 production of one and a half million bushels had been maintained, the 1970 yield would have been over nineteen million dollars - a difference of seventeen million dollars in 1970 alone.

A rough estimate of the total accumulated loss over the past fifty years expressed in 1970 dollars would be in excess of five hundred million dollars.

This loss can be charged almost exclusively to pollution of our estuaries, the natural breeding area for oysters.

Very truly yours,

LONG ISLAND OYSTER FARMS, INC.

/S/ Mr. J. Richard Nelson

C O P Y

C O P Y

STATE OF CONNECTICUT
Shell Fish Commission
Rogers Avenue Milford, Conn. 06460
P.O. Box 97 874-0696

February 11, 1971

Mr. Edward F. M. Wong
Shellfish Consultant
Environmental Protection Agency
Water Quality Office
240 Highland Avenue
Needham Heights, Mass. 02194

Dear Ed:

With reference to our telephone conversation concerning the cost of water pollution as related to our shellfishery, I am enclosing a copy of the report made to the Clean Water Task Force in 1966 which may be helpful. You will note that I estimated the total loss at over a billion dollars just in the shellfishery alone.

I am also enclosing a copy of the article in the New Haven Journal Courier, Monday, February 8, 1971, also a copy of work done by the University of Southern California concerning the Santa Barbara blowout which should be of interest.

Have you seen the latest work by George C. Matthiessen entitled, "A Review of Oyster Culture and the Oyster Industry in North America?" If not, I have an extra copy and will send it to you.

Sincerely,

CONN. STATE SHELL FISH COMM.

Ernest J. Bontya
Engineer

EJB:mem
Encl.

C O P Y

COPY

Of all the problems that face the Connecticut shellfisheries, the pollution of our rivers and costal waters has become the most serious. To appreciate this condition and its consequences, a brief review of the shellfisheries would be appropriate. The estuaries and wetlands form a complex ecological system contributing to a wide variety of fish and wildlife. The shellfisheries, as a part of such a complex, are in even more delicate balance in the requirements of a productive environment. Type of bottom, temperature, salinity, water quality and food are all key factors in the shellfish cycle and the variation of one is critical to growth and reproduction. Connecticut was gifted in this unique combination of conditions and became one of the most prolific shellfisheries in the world. At the turn of the century, production was over 3,000,000 bushels of mature and seed oysters annually. At today's prices, this would be about $40,000,000 per year. The decline of this industry as a result of the environmental change along our shorelines has been at the cost of over a billion dollars in shellfish during the past 65 years. Add to this the loss of the commercial finfishery that also prospered in Connecticut during this period as well as the future cost of pollution abatement and we have already had a costly lesson in the value of our water resources.

Today, the shellfisheries consist of approximately 64,000 acres; 46,000 acres under State control and 18,000 acres as Town ground.

COPY

Of the total, 42,000 acres would be considered oyster grounds, 20,000 acres of clam ground and 2,000 acres of escallop ground. The industry is generally located from Greenwich to Branford and has been the area of the greatest lost of productive ground. The area from Branford easterly to Stonington is predominately a sports shellfishery with a small commercial shellfishery in a number of towns. The total product value for both the commercial and sports shellfishery for 1964 is estimated at two and a half million dollars. Production for 1965 will be lower due to the continuing decline in water quality from pollution and the lack of fresh water run-off.

WATER POLLUTION

The shellfisheries require a high standard of water quality for propagation and more importantly, the protection of the consumer. Approximately 35% of all shellfish grounds are closed by the State Health Department for poor water quality. This closure prohibits direct marketing of oysters or clams from specific areas, however, transplanting to clean water is permitted under strict control. There are two general kinds of water pollution creating problems for our industry. Untreated or partially treated domestic sewage deposits sludge on shellfish grounds and removes dissolved oxygen from the water making the grounds useless for production. Domestic sewage also carries various types of human diseases which can be transmitted to humans. Industrial pollution is the disposal of wastes from manufacturing plants but it is convenient to broaden the definition to include other chemical pollutants such as detergents, oil, pesticides, chemical fertilizers and weed killers that wash into our streams. The effects of industrial waste are varied and often not as clear cut as domestic sewage. It is also economically impossible to remove the last trace of waste materials from processed water and harmful pollution can originate even in the presence of acceptable standards which might be met by a manufacturer in waste treatment. Considering the nature and extent of our polluted waters, it can be assumed that our major estuaries such as the Thames River, Connecticut River, New Haven Harbor and the Housatonic River can never be totally reclaimed for direct market shellfish. The remaining clean waters of Connecticut are therefore a valued asset and one objective of any program should be to prevent their loss to pollution as well as to support pollution abatement to bring other areas to more acceptable standards.

SHELLFISH FUTURE

The future of the shellfisheries is at best a challenge. There is a correlation in the loss of the former productive natural environment in our estuaries and the decline in shellfish production. Pollution, filling of the marshlands, dredging for gravel or fill, navigation projects, erosion and hurricane protection have all taken their toll. The environment that created our 3,000,000 bushel years is gone and although there are still thousands of acres of good shellfish bottom available, their ability to produce is keyed to a declining water quality. Recent developments in oyster and clam culture offer a number of areas of promise to the shellfish industry. Chemical control of some predators is now practical. The process known as depuration is available for the cleansing of shellfish from moderately polluted areas and would open thousands of acres of clam grounds. The artificial spawning of oysters and clams is in operation on Long Island and has excellent commercial possibilities, however, natural spawning will still be needed for volume production and our future shellfisheries will be dependent on a clean and productive water quality.

THE PROBLEM

The shellfisheries of Connecticut are an example of the consequences in the misuse or destruction of our irreplaceable natural resources. The hub of the commerical shellfisheries was the area between New Haven and Bridgeport. The Bridgeport beds were supported by the Housatonic River and the history of this river and it's pollution is well known. The New Haven Harbor is the terminal for three rivers: the West River, the Mill River and the Quinnipiac River. All of these streams are polluted in varying degrees and the Mill River is the classic example of our stream pollution problem. Its putrid grey green waters can only be appreciated by sight and smell. Pulp plants are the major contributors to this pollution and action by many local groups to correct the flagrant violation of pollution laws and common sense is defeated by political expediency and a negative attitude on the part of enforcement officials. The law is being compromised for jobs and our public waters have become their private sewer. The Mill River demonstrates how little protection the public interest and our water resources have had wherever the problem is basically the law and its administration. The emphasis being placed on pollution abatement is essentially a technical matter, however, without the strong support of our laws to prevent the increase of sources of pollution, much of any program would be wasted and therefore, our recommendations are limited to what we consider the first phase of clean water program.

1. Revise existing statutes, to clarify and define the State role and responsibility in water pollution control with emphasis on a policy that will recognize, preserve and protect the public interest in fish, wildlife and water resources.
2. The prevention and control of pollution is primarily a public health problem and should be under the jurisdiction of the State Health Department as a direct line responsibility. The professional stature of the State Health Department would minimize the pressures of special interests. Today, the dual role of the Health Department and the Water Resources Commission apparently provides a grey area of jurisdiction which is both a refuge and a source of inaction in resolving our pollution problems in the best interests of the public.
3. The existence of the Clean Water Task Force is an indication of what has not been done and on the basis of past experience, we have no

assurance of what will be done to implement and support pollution prevention and abatement in the waters of Connecticut. A citizen's group to oversee a clean water program for a period of five to ten years might be appropriate and would at least provide support and strength to the actions of any State agency that will in time be in charge of millions of dollars in pollution abatement programs.

Water pollution along the shores of Greenwich, Stamford and Darien have contributed to closing of several oyster firms in the area. Out of 11 oyster dealers operating in the Norwalk-Darien area, five have gone out of business with very little chance of returning. The Norwalk Estuary, including parts of Darien, produces approximately one million dollars worth of shellfish annually.

Even though pollution has closed an ever-increasing number of shellfish beds, interest seems to continue in commercial and recreational shellfishing. But even here the trend is downhill if we can use recent events in Norwalk as a representative example. From 1959-1965 there was a gradual increase to over 1,300 clamming permits issued annually in Norwalk. After 1965 the number declined, reaching about 900 in 1969.

APPENDIX D

WATER QUALITY STANDARDS

COPY

ANTIDEGRADATION STATEMENT
NEW YORK STATE

It is recognized that certain waters of New York State possess an existing quality which is better than the classification standards assigned thereto. The quality of these waters will be maintained unless and until it has been demonstrated to the satisfaction of the Commissioner of Environmental Conservation that other uses and different standards are justifiable as a result of necessary economic or social development. To accomplish this objective all proposed new or increased sources of pollution will be required to provide the best practical degree of waste treatment to maintain these waters at this higher quality.

In addition, there will be furnished to the Federal Water Quality Administration, U. S. Department of the Interior, such information as is needed to enable the Secretary of the Interior to fulfill his responsibilities under the Federal law.

Water which does not meet the assigned classification will be improved to meet the standards.

Adopted by Water Resources Commission
May 7, 1970

COPY

4. Classes and Standards For Tidal Salt Waters

CLASS SA

Best usage of waters: Shellfishing for market purposes and any other usages.

Quality Standards for Class SA Waters

Items	*Specifications*
1. Floating solids; settleable solids; oil; sludge deposits.	None attributable to sewage, industrial wastes or other wastes.
2. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the Marine District as defined by State Conservation Law.
3. Sewage or waste effluents.	None which are not effectively disinfected.
4. Dissolved oxygen.	Not less than 5.0 parts per million.
5. Toxic wastes, deleterious substances, colored or other wastes or heated liquids.	None alone or in combination with other substances or wastes in sufficient amounts or at such temperatures as to be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.
6. Organisms of Coliform group.	The median MPN value in any series of samples representative of waters in the shellfish growing area shall not be in excess of 70 per 100 milliliters.

CLASS SB

Best usage of waters: Bathing and any other usages except shellfishing for market purposes.

Quality Standards for Class SB Waters

Items	*Specifications*
1. Floating solids; settleable solids; oil; sludge deposits.	None attributable to sewage, industrial wastes or other wastes.
2. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the Marine District as defined by State Conservation Law.
3. Sewage or waste effluents.	None which are not effectively disinfected.
4. Dissolved oxygen.	Not less than 5.0 parts per million.
5. Toxic wastes, deleterious substances, colored or other wastes or heated liquids.	None alone or in combination with other substances or wastes in sufficient amounts or at such temperatures as to be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color,

odor or sanitary condition thereof; and otherwise none in sufficient amounts to make the waters unsafe or unsuitable for bathing or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS SC

Best usage of waters: Fishing and any other usages except bathing or shellfishing for market purposes.

Quality Standards for Class SC Waters

Items	*Specifications*
1. Floating solids; settleable solids; sludge deposits.	None which are readily visible and attributable to sewage, industrial wastes or other wastes or which deleteriously increase the amounts of these constituents in receiving waters after opportunity for reasonable dilution and mixture with the wastes discharged thereto.
2. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the Marine District as defined by State Conservation Law.
3. Dissolved oxygen.	Not less than 5.0 parts per million.
4. Toxic wastes, oil, deleterious substances, colored or other wastes or heated liquids.	None alone or in combination with other substances or wastes in sufficient amounts or at such temperatures as to be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS SD

Best usage of waters: Any usages except fishing, bathing, or shellfishing for market purposes.

Quality Standards for Class SD Waters

Items	*Specifications*
1. Floating solids; settleable solids; sludge deposits.	None which are readily visible and attributable to sewage, industrial wastes or other wastes or which deleteriously increase the amounts of these constituents in receiving waters after opportunity for reasonable dilution and mixture with the wastes discharged thereto.
2. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the Marine District as defined by State Conservation Law.
3. Dissolved oxygen.	Not less than 3.0 parts per million.

"(h) 'Board' means the New York water pollution control board created by this article."

Library references

Health 🔑23.
Waters and Water Courses 🔑37, 38, 64–70, 72.
C.J.S. Health § 21.
C.J.S. Waters §§ 3, 5, 43 et seq., 53.

1. Waters of the state

The "waters of the state" include all fresh water in streams, public or private, and board had power to classify creek even though it was a nonnavigable stream, the title of which was in private riparian owners. Application of City of Johnstown, 1961, 12 A.D.2d 218, 200 N.Y.S.2d 982.

TITLE II—CLASSIFICATION OF WATERS AND ADOPTION OF STANDARDS

Sec.
1205. Classification of waters and adoption of standards by Water Resources Commission.

Title added by L.1961, c. 490, § 5, eff. Jan. 1, 1962. A former Title II, which related to the water pollution control board, was omitted by the same act, eff. Jan. 1, 1962.

Law Review Commentaries

Water pollution control in New York. 31 Albany L.Rev. 50 (1967).

§ 1205. Classification of waters and adoption of standards, by water resources commission

1. It is recognized that, due to variable factors, no single standard of quality and purity of the waters is applicable to all waters of the state or to different segments of the same waters.

2. In order to attain the objectives of this article, the water resources commission after proper study, and after conducting public hearing upon due notice, shall group the designated waters of the state into classes. Such classification shall be made in accordance with considerations of best usage in the interest of the public and with regard to the considerations mentioned in subdivision three hereof.

3. In adopting the classification of waters and the standards of purity and quality above mentioned, the water resources commission shall give consideration to:

(a) the size, depth, surface area covered, volume, direction and rate of flow, stream gradient and temperature of the water;

(b) the character of the district bordering said waters and its peculiar suitability for the particular uses, and with a view to conserving the value of the same and encouraging the most appropriate use of lands bordering said waters, for residential, agricultural, industrial or recreational purposes;

(c) the uses which have been made, are being made or may be made, of said waters for transportation, domestic and industrial consumption, bathing, fishing and fish culture, fire prevention, the disposal of sewage, industrial waste and other wastes, or other uses within this state, and, at the discretion of the water resources commission, any such uses in another state on interstate waters flowing through or originating in this state;

(d) the extent of present defilement or fouling of said waters which has already occurred or resulted from past discharges therein.

4. The water resources commission, after proper study, and after conducting public hearings upon due notice, shall adopt and assign standards of quality and purity for each such classification necessary for the public use or benefit contemplated by such classification. Such standards shall prescribe what qualities and properties of water shall indicate a polluted condition of the waters of the state which is actually or potentially deleterious, harmful, detrimental or injurious to the public health, safety or welfare, to terrestrial or aquatic life or the

growth and propagation thereof, or to the use of such waters for domestic, commercial, industrial, agricultural, recreational or other reasonable purposes, with respect to the various classes established pursuant to subdivision two hereof.

5. In establishing such standards, consideration shall be given to the following factors:

(a) the extent, if any, to which floating solids may be permitted in the water;

(b) the extent to which suspended solids, colloids or a combination of solids with other substances suspended in water, may be permitted;

(c) Organisms of the coliform group or any other organisms from wastes of animal or human origin shall not exceed the following prescribed standards for usage of the classified waters of the state:

(i) Sources of water supply for drinking, culinary or food processing purposes which, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, meet or will meet New York state health department drinking water standards and any other usages: For such sources the monthly median coliform value for one hundred ml of sample shall not exceed fifty from a minimum of five examinations and provided that not more than twenty percent of the samples shall exceed a coliform value of two hundred forty for one hundred ml of sample.

(ii) Sources of water supply for drinking, culinary or food processing purposes which, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York state department of health drinking water standards; bathing, fishing, boating, and any other usages: For such sources the monthly median coliform value for one hundred ml of sample shall not exceed five thousand from a minimum of five examinations and provided that not more than twenty percent of the samples shall exceed a coliform value of twenty thousand for one hundred ml of sample.

(iii) Sources of water for bathing, fishing, boating, and any other usages except shellfishing for market purposes in tidal salt waters: For such sources the monthly median coliform value for one hundred ml of sample shall not exceed two thousand four hundred from a minimum of five examinations and provided that not more than twenty percent of the samples shall exceed a coliform value of five thousand for one hundred ml of sample and provided further that surface waters receiving treated sewage discharges which pass through residential communities where there is a potential exposure of population to the surface waters shall be protected by the requirement that all effluents from sewage treatment plants shall be adequately disinfected prior to discharge into the surface waters in order that the monthly median coliform value for one hundred ml of sample shall not exceed two thousand four hundred from a minimum of five examinations and provided that not more than twenty percent of the samples shall exceed a coliform value of five thousand for one hundred ml of sample.

(iv) Sources of water for shellfishing for market purposes and any other usages of tidal salt waters: Median MPN not to exceed seventy coliform organisms per one hundred milliliter sample in a series of four or more samples collected during any thirty-day period in the waters of a shellfishing area, and not exceeding in more than ten percent of the samples collected during the period an MPN of two hundred thirty coliform organisms per one hundred milliliters for a five-tube, or an MPN of three hundred thirty per one hundred milliliters for a three-tube decimal dilution test in those areas most probably exposed to fecal contamination during the most unfavorable hydrographic conditions.

(v) All samples shall be collected, analyzed, and reported in a manner satisfactory to the state commissioner of health.

State of New York

PART 704

CRITERIA GOVERNING THERMAL DISCHARGES (HEATED LIQUIDS)

(Statutory authority: Conservation Law, § 420)

Sec.
704.1 Criteria governing thermal discharges (heated liquids)
704.2 Additional limitations or modifications
704.3 Rules and regulations
704.4 Extent of applicability of criteria to existing discharges

Historical Note

Part (§§ 704.1-704.4) added, filed Aug. 12, 1969 eff. Aug. 12, 1969.

Section 704.1 **Criteria governing thermal discharges (heated liquids).** The standards for thermal discharges (heated liquids) to the waters of the State are "None alone or in combination with other substances or wastes in sufficient amounts or at such temperatures as to be injurious to fish life . . . or impair the waters for any other best usage . . ." (6 NYCRR 701.3 *et seq.*) and shall be applied, under Water Pollution Control Act, Public Health Law, article 12, as follows:

(a) *Definitions.* (1) A *thermal discharge* is one which is at a temperature greater than 70°F. A discharge at a lower temperature will also be a thermal discharge if it results in a temperature rise of the receiving water above the permissible temperature rises listed below.

(2) The term *addition of heat of artificial origin* as used throughout the criteria shall include all heat from other than natural sources. In the event of multiple discharges, consideration shall be given to the cumulative effects of such discharges.

(3) *Coastal waters* are those marine waters within the territorial limits of the State other than estuaries.*

(4) *Estuaries* are the tidal portions of all rivers and streams, the bays of the south shore of Long Island and Peconic Bay.*

(b) *Fresh waters.*

(1) *Streams.* (i) *Non-trout waters.* The water temperature at the surface of a stream shall not be raised to more than 90°F at any point. Further, at least 50 percent of the cross sectional area and/or volume of the flow of the stream including a minimum of one third of the surface as measured from shore to shore shall not be raised to more than 5°F over the temperature that existed before the addition of heat of artificial origin or to a maximum of 83°F whichever is less,‡ except during periods of the year when stream temperatures are below 39°F. A greater than 5°F increase may be authorized under "Additional limitations or modifications", section 704.2, *infra.* For the protection of the aquatic biota from severe temperature changes, routine shut down of an entire thermal discharge at any site should not be scheduled during the period from December through March.

(ii) *Trout waters.* No discharges at a temperature over 70°F will be permitted at any time to streams classified for trout. From June through September, no discharges at any temperature will be permitted that will raise the temperature of the stream more than 2°F over that which existed before the

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[*] The waters of Long Island Sound and its bays or portions thereof have characteristics of either coastal waters and/or estuaries. The criteria to be applied to any particular project will depend upon the site location and all other relevant facts. The applicable criteria will be determined as provided in subdivisions (a) and (b) of section 704.2, *infra.*

[‡] It is recognized that because of widely varying conditions in streams and estuaries, the commissioner will establish, where necessary to meet the standards for thermal discharges, a lower maximum surface water temperature and a greater zone of passage under the procedures set forth in "Additional limitations or modifications", section 704.2, *infra.*

addition of heat of artificial origin. From October through May, no discharges at any temperature will be permitted that will raise the temperature of the stream more than 5°F over that which existed before the addition of heat of artificial origin or to a maximum of 50°F whichever is less.

(2) *Lakes.* The water temperature at the surface of a lake shall not be raised more than 3°F over the temperature that existed before the addition of heat of artificial origin, except that within a radius of 300 feet or equivalent area[*] from the point of discharge, this temperature may be exceeded. In lakes subject to stratification, the thermal discharges shall be confined to the epilimnetic area.

(3) *Coastal waters.* The water temperature at the surface of coastal waters shall not be raised more than 4°F over the monthly means of maximum daily temperatures from October through June nor more than 1.5°F from July through September except that within a radius of 300 feet or equivalent area[*] from the point of discharge this temperature may be exceeded.

(4) *Estuaries or portions of estuaries.* The water temperature at the surface of an estuary shall not be raised to more than 90°F at any point provided further, at least 50 percent of the cross sectional area and/or volume of the flow of the estuary including a minimum of one third of the surface as measured from water edge to water edge at any stage of tide, shall not be raised to more than 4°F over the temperature that existed before the addition of heat of artificial origin or a maximum of 83°F, whichever is less.[‡] However, during July through September if the water temperature at the surface of an estuary before the addition of heat of artificial origin is more than 83°F, an increase in temperature not to exceed 1.5°F, at any point of the estuarine passageway as delineated above, may be permitted.

Historical Note

Sec. added, filed Aug. 12, 1969 eff. Aug. 12, 1969.

704.2 Additional limitations or modifications. (a) The Commissioner of Health may impose limitations and/or conditions in addition to the stated criteria where he determines, in the exercise of his discretion, that such additional limitations and/or conditions are necessary to maintain the quality of the receiving waters for the best usage classifications and standards assigned by the Water Resources Commission pursuant to Public Health Law, article 12, section 1205.

(b) The commissioner may authorize a conditional modification of the stated criteria upon application. Upon receipt of such application the commission shall confer with the Federal Water Pollution Control Administration and shall transmit to that agency information to enable the Secretary of the Interior to fulfill his responsibilities under Federal law. The applicant shall have the burden of establishing to the satisfaction of the Commissioner of Health that one or more of the criteria are unnecessarily restrictive as to a particular project in that a modification of such criterion, or criteria, as the case may be, would not impair the quality of the receiving waters so as to adversely affect them for the best usage classifications and standards assigned by the Water Resources Commission. The commissioner may, when he determines it to be in the public interest, hold a public hearing upon the application.

(c) Any such modification shall be conditioned upon post-operational experience. Plans for additional treatment of, or change in, the thermal discharge shall be developed and submitted as part of the application to the commissioner which shall be implemented upon order of the commissioner in the event that post-operational experience shows a trend toward impairment by the discharge of the quality of the receiving waters for the assigned best usage classifications and standards.

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[*] It is recognized that a radius of 300 feet or equivalent area may be too liberal or too restrictive and that a lesser or greater area may be required or permitted under the procedures set forth in "Additional limitations or modifications", section 701.2, *infra*.

[‡] It is recognized that because of widely varying conditions in streams and estuaries, the commissioner will establish, where necessary to meet the standards for thermal discharges, a lower maximum surface water temperature and a greater zone of passage under the procedures set forth in "Additional limitations or modifications", section 704.2, *infra*.

Historical Note

Sec. added, filed Aug. 12, 1969 eff. Aug. 12, 1969.

704.3 **Rules and regulations.** The commissioner may adopt rules and regulations with the approval of the Water Resources Commission governing the procedures prescribed or authorized herein. Such rules and regulations may include the methods and procedures for the making of tests and analytical determinations hereunder and the notice and hearing procedure to be followed in administering section 704.2, *supra.*

Historical Note

Sec. added, filed Aug. 12, 1969 eff. Aug. 12, 1969.

704.4 **Extent of applicability of criteria to existing discharges.** (a) In determining whether a discharge existing prior to the adoption of the above criteria complies with the applicable standard for thermal discharges ("None alone or in combination with other substances or wastes in sufficient amounts or at such temperature as to be injurious to fish life . . . or impair the waters for any other best usage . . ." [6 NYCRR 701.3 *et seq.*]), these criteria are intended only to be a frame of reference.

(b) Moreover, the procedures described in Public Health Law, section 1223, shall apply in any application of the criteria to discharges existing prior to the adoption of these criteria without regard to whether such discharges began prior to or subsequent to the enactment of this State's Water Pollution Control Act (now Public Health Law, article 12).

Historical Note

Sec. added, filed Aug. 12, 1969 eff. Aug. 12, 1969.

STATE OF CONNECTICUT
WATER RESOURCES COMMISSION
STATE OFFICE BUILDING ● HARTFORD, CONNECTICUT 06115

WATER QUALITY CRITERIA

GENERAL POLICY

1. Water quality standards adopted on the basis of these criteria are in accord with all the requirements of Section 25-54e of the 1967 Supplement to the General Statutes.

2. In the discharge of waste treatment plant effluent and cooling waters to the receiving waters, cognizance shall be given both in time and distance to allow for mixing of effluent and stream. Such distances required for complete mixing shall not affect the water usage Class adopted but shall be defined and controlled by the Commission.

3. Recommendations on other waste parameters will constitute a portion of the continuing effort of the Commission in further defining interstate and intrastate water quality standards. The Commission reserves the right to amend or extend the following criteria as improved standard methods are developed or revisions consistent with the enhancement of water quality are justified.

4. Coastal and marine waters are those generally subject to the rise and fall of the tide.

5. Interstate waters whose existing quality is better than the established standards as of the date which such standards become effective will be maintained at their existing high quality. These and other interstate waters of the State will not be lowered in quality unless and until it has been affirmatively demonstrated to the Commission and the Department of the Interior that such change is justifiable as a result of necessary economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. This will require that any industrial, public or private project or development which would constitute a new source of pollution or an increased source of pollution to high quality waters will be required, if provided a permit, as part of the initial project design, to provide the highest and best degree of waste treatment available under existing technology, and, since for interstate waters these are also Federal standards, these waste treatment requirements will be developed cooperatively.

NOTES

1. These criteria do not apply to conditions brought about by natural causes.

2. Class D waters will be assigned only where a higher water use Class cannot be attained after all appropriate waste treatment methods are utilized.

3. All sewage treatment plant effluents shall receive disinfection before discharge to the watercourse. The degree of treatment and disinfection shall be as required by the State.

4. Waters shall be free from chemical constituents in concentrations or combinations which would be harmful to human, animal, or aquatic life for the appropriate, most sensitive and governing water class use. In areas where fisheries are the governing considerations and approved limits have not been established, bioassays shall be performed as required by the appropriate agencies. For public drinking water supplies the raw water sources must be of such a quality that United States Public Health Service limits, or State limits if more stringent, for finished water can be met after conventional water treatment.

5. Radioactivity limits to be approved by the appropriate State agency with consideration of possible adverse effects in downstream waters from discharge of radioactive wastes; limits in a particular watershed to be resolved when necessary after consultation between appropriate State and Federal agencies. In no case shall the Alpha emitters exceed a concentration of 3 picocuries per liter or the Gross Beta emitters exceed a concentration of 1000 picocuries per liter.

6. Sludge deposits, floating solids, oils, grease and scum shall not be allowed except for such small amounts that may result from the discharge of appropriately treated sewage or industrial waste effluents.

7. The minimum average daily flow for seven consecutive days that can be expected to occur once in ten years shall be the minimum flow to which the standards apply.

8. Class B and C waters shall be substantially free of pollutants that: a) unduly affect the composition of bottom fauna; b) unduly affect the physical or chemical nature of the bottom; c) interfere with the propagation of fish.

9. Class A waters reserved for water supply may be subject to restricted use by State and Local regulation.

10. All interstate Class A waters and all interstate Class B waters, except Shetucket River from confluence of Willimantic and Natchaug Rivers to Greenville Dam, Norwich, are considered to be suitable for cold water fish spawning and growth.

11. The criteria for dissolved oxygen and allowable temperature increase for interstate Class B and Cc waters are applicable to waters used only for fish passage. When such class waters are suitable for cold water fish spawning and growth, these criteria shall be the same as those specified for Class A waters.
12. In the case of interstate Class B and Cc waters where parts of such waters are not suitable for spawning and growth, the requirements for fish passage shall be considered with other sensitive uses in defining allowable temperature increases.

COASTAL AND MARINE WATERS

CLASS SA

Suitable for all sea water uses including shellfish harvesting for direct human consumption (approved shellfish areas), bathing, and other water contact sports.

1.	Dissolved oxygen	Not less than 6.0 mg/l at any time
2.	Sludge deposits - solid refuse - floating solids, oils, and grease - scum	None allowable
3.	Color and turbidity	None in such concentrations that will impair any usages specifically assigned to this Class
4.	Coliform bacteria per 100 ml	Not to exceed a median MPN of 70 and not more than 10% of the samples shall ordinarily exceed an MPN of 230 for a 5-tube decimal dilution or 330 for a 3-tube decimal dilution (See Note S.5)
5.	Odor	None allowable
6.	pH	6.8 - 8.5
7.	Allowable temperature increase	None except where the increase will not exceed the recommended limit on the most sensitive receiving water use and in no case exceed 85° F or in any case raise the normal temperature of the receiving water more than 4° F
8.	Chemical constituents	None in concentrations or combinations which would be harmful to human, animal, or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, impair the palatability of same, or impair the waters for any other uses.
9.	Radioactivity	(See Note S.6)

CLASS SB

Suitable for bathing, other recreational purposes, industrial cooling and shellfish harvesting for human consumption after depuration; excellent fish and wildlife habitat; good aesthetic value.

1.	Dissolved oxygen	Not less than 5.0 mg/l at any time
2.	Sludge deposits - solid refuse - floating solids, oils and grease - scum	None except that amount that may result from the discharge from a waste treatment facility providing appropriate treatment
3.	Color and turbidity	None in such concentrations that would impair any usages specifically assigned to this Class
4.	Coliform bacteria per 100 ml	Not to exceed a median value of 700 and not more than 2300 in more than 10% of the samples (See Note S.5)
5.	Taste and odor	None in such concentrations that would impair any usages specifically assigned to this Class and none that would cause taste and odor in edible fish or shellfish
6.	pH	6.8 - 8.5
7.	Allowable temperature increase	None except where the increase will not exceed the recommended limit on the most sensitive receiving water use and in no case exceed 85° F or in any case raise the normal temperature of the receiving water more than 4° F.
8.	Chemical constituents	None in concentrations or combinations which would be harmful to human, animal, or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, or impair the water for any other usage assigned to this Class
9.	Radioactivity	(See Note S.6)

CLASS SC

Suitable fish, shellfish and wildlife habitat; suitable for recreational boating and industrial cooling, good aesthetic value.

1. Dissolved oxygen	Not less than 5 mg/l for more than 6 hours during any 24-hour period and at no time less than 4 mg/l. For cold water fishery, SCc, not less than 5 mg/l at any time
2. Sludge deposits - solid refuse - floating solids, oils and grease - scum	None except that amount that may result from the discharge from a waste treatment facility providing appropriate treatment
3. Color and turbidity	None in such concentrations that would impair any usages specifically assigned to this Class
4. Coliform bacteria per 100 ml	Not to exceed an average in any 30-day period of 5000 nor exceed this value in more than 20% of the samples collected during the period.
5. Taste and odor	None in such concentrations that would impair any usages specifically assigned to this Class and none that would cause taste and odor in edible fish or shellfish
6. pH	6.5 - 8.5
7. Allowable temperature increase	None except where the increase will not exceed the recommended limit on the most sensitive receiving water use and in no case exceed 85° F or in any case raise the normal temperature of the receiving water more than 4° F
8. Chemical constituents	None in concentrations or combinations which would be harmful to human, animal, or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, or impair the water for any other usage assigned to this Class
9. Radioactivity	(See Note S.6)

NOTES

S.1 All sewage treatment plant effluents shall receive disinfection before discharge to coastal and marine waters. The degree of treatment and disinfection shall be as required by the State.

S.2 These criteria do not apply to conditions brought about by natural causes.

S.3 The waters shall be substantially free of pollutants that will: a) unduly affect the composition of bottom fauna, b) unduly affect the physical or chemical nature of the bottom; c) interfere with the propagation of fish.

S.4 These criteria shall apply at all times in coastal and marine waters.

S.5 Surveys to determine coliform concentrations shall include those areas most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

S.6 The discharge of radioactive materials in concentrations or combinations which would be harmful to human, animal or aquatic life shall not be allowed. In no case shall the Alpha emitters exceed a concentration of 3 picocuries per liter or the Gross Beta emitters exceed a concentration of 1000 picocuries per liter.

S.7 All interstate Class SA waters and all interstate Class SB waters, except Housatonic River from Derby Dam to mouth, Connecticut River from Hurd State Park in East Hampton to mouth, and Shetucket and Thames Rivers from Greenville Dam, Norwich, to mouth, are considered to be suitable for cold water fish spawning and growth.

S.8 The criteria for dissolved oxygen and allowable temperature increase for interstate Class SB and SCc waters are applicable to waters used only for fish passage. When such waters are suitable for cold water fish spawning and growth, these criteria shall be the same as those specified for Class SA waters.

S.9 In the case of interstate Class SB and SCc waters where parts of such waters are not suitable for spawning and growth, the requirements for fish passage shall be considered with other sensitive uses in defining allowable temperature increases.

APPENDIX E

FEDERAL WATER QUALITY ADMINISTRATION SURVEY OF LONG ISLAND SOUND

SEPTEMBER - OCTOBER 1969

STATION DESCRIPTION
ENVIRONMENTAL PROTECTION AGENCY
LONG ISLAND SOUND SURVEY
SEPTEMBER - OCTOBER 1969

Station	Description	Station	Description
1	Whitestone Bridge	36	Near Orchard Beach
2	Throggs Neck Bridge	37	New Rochelle Outfall
3	Near Stepping Stones	38	Larchmont Harbor
4	Near City Island	39	Mouth of Larchmont Harbor
5	Near Execution Rocks	40	Mamaroneck Harbor
6	Outside Mamaroneck Harbor	41	Mamaroneck Outfall
7	Off Fox Point	42	Off Peningo Neck
8	Near Great Captain Island	43	Blind Brook Outfall
9	Off Lloyd Point	44	Port Chester Harbor
10	Outside Cove Harbor	45	Near Bluefish Shoal
11	Off Eatons Neck	46	Captain Harbor
12	Off Norwalk Islands	47	Greenwich Harbor
13	Outside Smithtown Bay	48	Stamford Harbor
14	Outside Bridgeport Harbor	49	Mouth Stamford Harbor
15	Outside Mt. Sinai Harbor	50	Darien River
16	Off Pond Point	51	Norwalk Harbor Entrance Channel
17	Off Herod Point	52	Saugatuck River
18	Outside Branford Harbor	53	Southport Harbor
19	Off Jacobs Point	54	Black Rock Harbor
20	Off Orient Point	55	Off Bridgeport
21	Off Hatchett Point	56	Bridgeport Harbor
22	Near The Race	57	Housatonic River
23	Outside New London Harbor	58	Mouth Housatonic River
24	Little Neck Bay	59	Mouth Milford Harbor
25	Manhasset Bay	60	New Haven Harbor
26	Hempstead Harbor	61	Mouth New Haven Harbor
27	Matinecock Point	62	Branford Harbor
28	Oyster Bay	63	The Thimbles
29	Huntington Bay	64	Guilford Harbor
30	Nissequoque River	65	Clinton Harbor
31	Stony Brook	66	Connecticut River
32	Port Jefferson Harbor	67	Mouth Connecticut River
33	Inlet Point	68	New London Harbor
34	Fishers Island	69	Mouth New London Harbor
35	Eastchester Bay		

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, SEPT. 29-OCT. 3, 1969

Station	Depth Feet	Water Temp. °C	Conductivity umnos	Salinity g/1	Chloride mg/1	DO mg/1	Percent Sat.	BOD mg/1	TOC mg/1	Turbidity ppm	NO_3-N mg/1	PO_4-P mg/1	Chlorophyll a mg/m^3	Total Coliform/100 ml	Fecal Coliform/100 ml
1-S	10.0	19.8	34.300	24.3	14,600	4.6	58.9	3.0	6	1.0	0.25	.36	4.4	27,000	5,600
1-D	64.0	19.9	34,800	24.7	14,800	4.8	61.7	2.6	3	2.0	0.23	.36	-	15,000	3,500
2-S	10.0	19.8	34,800	24.7	14,100	4.8	61.1		3	1.0	0.24	.33	7.2	18,000	6,600H
2-D	57.0	19.8	35,000	24.7	14,500	5.1	65.2	2.0	3	2.0	0.22	.36	-	14,000	3,300
3-S	10.0	19.7	35,200	24.9	15,000	5.7	64.9	3.0	4	1.0	0.21	.29	7.78	3.000	640
3-D	58.0	19.8	35,200	25.1	14,600	5.5	70.4	1.5	5	1.0	0.22	.29		2,800	480
4-S	5.0	19.6	35.100	25.0	14,600	6.1	77.8		4	1.0	0.20	.29	8.3	600	140
4-D	70.0	19.9	35,300	25.3	14,800	5.6	72.0		3	1.0	0.21	.29	-	150	50
5-S	5.0	19.9	36,100	25.7	14,800	7.3	102.0	3.1	6	1.0	0.18	.26	14.5	28L	02L
5-D	60.0	19.9	36,200	25.7	14,700	6.8	76.9		3	1.0	0.17	.23	-	290	40
6-S	5.0	19.9	36,500	26.0	14,800	7.4	77.7		5	1.0	0.15	.16	-	06L	02
6-D	41.0	19.9	36,700	26.1	14,500	6.4	84.7		2	1.0	0.17	.20	-	08L	02L
7-S	5.0	19.9	36,600	26.0	14,300	7.8	99.7	1.5	3	1.0	0.16	.23	9.0	02L	02
7-D	45.0	19.9	36,800	26.2	14,600	7.0	89.8		3	1.0	0.17	.20	-	02L	02
8-S	5.0	20.1	37,200	26.5	14,600	7.4	95.3		3	1.0	0.16	.20	-	02	02
8-D	41.0	20.0	36,900	26.3	14,900	7.1	91.6		4	1.0	0.15	.20	-	02	02
9-S	5.0	20.0	37,000	26.3	15,000	7.5	96.9		3	1.0	0.18	.20	-	02	02
9-D	32.0	20.0	36,900	26.3	15,000	6.9	89.1		4	1.0	0.17	.16	-	02	02
10-S	5.0	20.1	37,200	26.5	15,000	7.5	97.1	1.4	3	2.0	0.14	.16	8.8	02L	02
10-D	72.0	20.1	37,400	26.5	15,100	6.3	81.6		2	3.0	0.15	.13	-	02L	02L
11-S	5.0	19.6	37,100	26.6	15,300	7.1	91.4		9	1.0	0.14	.13	-	02	02
11-D	49.0	19.9	37,100	26.5	15,200	6.5	84.0		3	1.0	0.14	.13	-	02	02
12-S	5.0	19.8	37,500	26.8	15,000	7.0	90.1	1.2	9	1.0	0.13	.13	6.4	02	02
12-D	63.0	19.7	37,400	26.9	15,200	6.5	83.7		4	1.0	0.13	.13	-	02	02
13-S	5.0	19.9	37,200	26.6	15,500	6.9	89.5	1.1	9	1.0	0.14	.13	3.6	02	02
13-D	100.0	20.0	38,000	27.0	15,700	6.1	79.5		2	1.0	0.15	.10	-	02	02
14-S	5.0	20.0	37,500	26.9	15,000	6.5	84.0		2	1.0	0.15	.13	-	02	02
14-D	56.0	20.0	37,600	26.8	15,200	6.5	84.2		3	1.0	0.19	.13	-	02L	02

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, SEPT. 29-OCT. 3, 1969 (Cont'd.)

Station	Depth Feet	Water Temp. °C	Conductivity umhos	Salinity g/l	Chloride mg/l	DO mg/l	Percent Sat.	BOD mg/l	TOC mg/l	Turbidity ppm	NO_3-N mg/l	PO_4-P mg/l	Chlorophyll a mg/m^3	Total Coliform/100 ml	Fecal Coliform/100 ml
15-S	5.0	20.2	37,600	26.8	15,700	7.3	95.5		2	1.0	0.12	.13	-	02	02
15-D	100.0	20.0	37,900	27.2	16,000	6.4	83.7		16	1.0	0.12	.10	-	02	02
16-S	5.0	19.8	37,700	26.8	15,600	6.8	88.2	.8	3	1.0	0.15	.13	2.6	02	02
16-D	50.0	19.7	37,600	26.7	15,700	6.5	84.2		2	1.0	0.14	.10	-	02	02
17-S	5.0	19.9	38,300	27.4	15,400	7.4	95.9	.9	5	1.0	0.13	.10	2.8	02	02
17-D	90.0	19.5	38,100	27.6	14,600	6.7	85.3		3	1.0	0.12	.10	-	02	02
18-S	5.0	19.5	37,300	27.0	14,600	7.6	96.8		3	1.0	0.13	.13	-	02	02
18-D	48.0	19.3	32,200	27.0	14,900	6.9	87.8		3	1.0	0.14	.13	-	02	02
19-S	5.0	19.7	37,900	27.1	15,700	7.6	98.5		2	1.0	0.10	.10	-	02	02
19-D	76.0	19.7	37,900	27.1	15,400	7.1	91.6		3	1.0	0.10	.10	-	02	02
20-S	5.0	18.8	38,300	28.0	16,300	7.5	96.2		2	1.0	0.07	.10	-	02	02
20-D	100.0	18.4	38,900	28.8	16,400	7.1	90.5		3	1.0	0.07	.03	-	02	02
21-S	5.0	18.2	39,000	28.9	16,700	7.5	95.6	1.0	2	1.0	0.08	.03	3.4	02	02
21-D	45.0	18.0	39,200	29.2	16,900	7.3	92.9		3	1.0	0.08	.03	-	02	02
22-S	5.0	18.1	38,800	28.8	16,800	7.5	95.5	.6	2	1.0	0.08	.03	3.3	02	02
22-D	100.0	17.8	39,200	29.4	16,800	7.3	92.4		2	1.0	0.06	.03	-	02	02
23-S	5.0	18.3	39,400	29.1	17,100	7.7	98.8		2	1.0	0.08	.03	-	02	02
23-D	60.0	18.2	39,300	29.2	17,600	7.4	94.6		2	1.0	0.07	.03	-	02	02
24-S	8.5	19.6	34,700	24.7	14,400	5.1	64.9		4	1.0	0.20	.36	4.6S	12,000	4,200
25-S	5.0	19.8	35,300	25.0	14,200	6.2	79.0	2.0	5	1.0	0.20	.29	7.6	180	12L
26-S	5.0	19.8	35,700	25.3	15,700	8.7	112.9	3.7	4	1.0	0.15	.20	18.6	04L	02L
26-D	27.0	19.5	35,500	25.5	14,600	8.2	104.4		4	1.0	0.18	.2	-	04L	02
27-S	5.0	19.7	36,000	25.6	14,700	7.7	98.5	2.3	4	1.0	0.20	.20	10.7	04	04
28-S	5.0	19.8	36,400	26.2	15,100	7.9	101.8	2.0	4	1.0	0.14	.20	7.6	02L	02
28-D	20.0	19.6	36,500	25.8	14,900	7.1	90.9		7	1.0	0.14	.20	-	02	02
29-S	5.0	18.6	35,500	25.8	14,500	7.8	97.4	1.2	3	1.0	0.22	.16	7.6	02L	02
29-D	25.0	18.8	35,600	25.9	14,600	7.5	94.2		3	1.0	0.12	.16	-	02L	02
30-S	5.0	19.7	36,800	26.5	15,300	8.9	93.7		12	1.0	0.10	.16	19.7	02	02

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, SEPT. 29-OCT. 3, 1969 (Cont'd.)

Station	Depth Feet	Water Temp. °C	Conductivity umhos	Salinity g/1	Chloride mg/1	DO mg/1	Percent Sat.	BOD mg/1	TOC mg/1	Turbidity ppm	NO_3-N mg/1	PO_4-P mg/1	Chlorophyll a mg/m	Total Coliform/100 ml	Fecal Coliform/100 ml
31-S	5.0	19.6	36,700	26.2	15,500	8.6	110.9		*	1.0	0.14	.13	-	04L	02
32-S	5.0	19.9	37,100	26.4	15,600	9.2	119.5	2.3	3	1.0	0.08	.13	18.6	50	04L
32-D	33.0	20.2	37,100	26.4	16,200	9.4	123.7		12	1.0	0.09	.13	-	18L	06L
33-S	5.0	18.9	38,100	27.7	15,900	7.7	98.5	1.2	4	1.0	0.11	.07	7.1	22L	08L
33-D	19.0	18.9	38,200	28.0	15,800	7.5	95.8		2	1.0	0.07	.07	-	16L	02L
34-S	5.0	18.0	39,200	29.3	16,800	7.6	96.8		2	1.0	0.08	.03	-	02	02
34-D	24.0	18.0	39,200	29.4	17,000	7.5	95.5		2	1.0	0.08	.03	-	02L	02
35-S	5.5	18.4	34,000	24.7	14,300	8.0	99.3	4.2	4	1.0	0.21	.26	19.68	210	32L
36-S	5.0	20.0	35,500	25.0	14,500	6.6	84.7	1.9	5		0.19	.29	-	390	80
37-S	5.0	19.7	35,400	25.3	14,600	7.7	98.4	3.3	2		0.19	.23	22.1	100	38L
37-D	21.0	19.5	35,700	25.3	14,700	6.1	77.7		6		0.18	.23	-	2,600	230
38-S	5.0	20.1	35,300	25.0	14,600	7.7	99.2	3.9	2		0.14	.20	52.1	320	40L
39-S	5.0	19.7	35,500	25.3	14,400	8.0	102.0	3.4	2		0.18	.26	-	420	230
39-D	26.0	19.7	36,000	25.7	14,800	6.0	76.9		2		0.17	.26	-	1,200	380
40-S	5.0	19.5	34,800	24.7	14,500	5.6	72.2	2.5	2		0.14	.23	15.0	420	180
41-S	5.0	19.6	35,400	25.3	14,200	7.9	100.3	3.4	2		0.17	.26	29.0	4,000	640
41-D	39.0	19.7	36,800	26.3	14,200	5.5	69.9		2		0.14	.20	-	120L	12L
42-S	5.0	19.5	36,000	25.8	14,800	7.3	93.2	2.4	2		0.16	.23	-	2,500	410
42-D	39.0	19.5	36,600	26.3	15,200	5.6	69.4		2		0.14	.16	-	130	46
43-S	5.0	19.6	36,100	25.8	15,100	7.5	96.3	2.2	3		0.14	.23	24.3	220	56
43-D	37.0	19.7	36,700	26.1	15,100	5.4	69.4		3		0.13	.20	-	08L	02L
44-S	5.0	19.5	35,700	25.7	14,800	6.3	80.4	2.0	2		0.13	.23	18.6	14,000	2,100
45-S	5.0	19.7	36,200	25.9	14,900	7.5	96.2	2.5	2		0.14	.20	-	100	28L
45-D	34.0	19.6	36,500	26.3	14,800	6.8	86.9		4		0.13	.16	-	28L	02
46-S	5.0	19.4	36,500	26.3	14,700	7.4	94.1	1.6	5		0.13	.20	15.2	92	36L
47-S	5.0	19.2	35,800	25.7	14,400	6.4	80.8	3.5	2		0.11	.33	18.6	18,000	9,800
48-S	5.0	19.6	36,700	26.3	14,900	6.8	87.1	2.4	3		0.10	.20	14.9	15,000	8,900H
48-D	17.0	19.5	36,700	26.3	15,100	7.2	92.2		2		0.12	.16	-	7,600	3,600

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, SEPT. 29-OCT. 3, 1969 (Cont'd.)

Station	Depth Feet	Water Temp. °C	Conductivity umhos	Salinity g/1	Chloride mg/1	DO mg/1	Percent Sat.	BOD mg/1	TOC mg/1	Turbidity ppm	NO_3-N mg/1	PO_4-P mg/1	Chlorophyll a mg/-	Total Coliform/100 ml	Fecal Coliform/100 ml
49-S	5.0	19.4	36,700	26.4	15,200	7.7	98.6	1.8	4		0.10	.16	14.9	960	260
49-D	20.0	19.4	36,700	26.3	15,200	7.6	97.3		2		0.12	.16	-	1,100	230
50-S	5.0	19.4	36,800	26.5	15,600	7.7	99.0	1.5	3		0.11	.16	13.6	04	02
51-S	5.0	18.9	36,300	26.6	15,400	7.2	91.5	1.0	2		0.10	.16	8.0	36L	24L
52-S	5.0	18.9	36,300	26.3	15,300	8.9	113.0	2.5	3		0.08	.13	12.2	02L	02
53-S	5.0	19.3	36,900	26.2	13,300	9.6	119.8	2.3	3		0.09	.13	11.6	04L	02
54-S	5.0	19.5	36,600	26.3	15,100	5.3	67.9	2.3	2		0.14	.20	11.6	2,400	230
54-D	15.0	19.3	36,800	26.5	15,700	5.5	70.7		3		0.12	.16	-	130	22L
55-S	5.0	19.9	37,100	26.5	15,500	7.4	96.0	1.5	2		0.12	.16	10.2	2,900	210
55-D	17.0	19.6	37,000	26.6	15,300	7.4	95.2		3		0.15	.13	-	1,400	120
56-S	5.0	21.6	37,400	25.8	14,800	5.9	78.4	.9	2		0.15	.23	8.0	>30,000	2,300
56-D	32.0	19.9	37,000	26.2	15,000	6.3	81.2		2		0.11	.16	-	140	18L
57-S	5.0	20.3	26,000	17.7	10,500/10,300	5.5	55.4	2.3	3	2.0	0.32	.23	9.2	2,200	100
57-D	22.0	19.7	33,300	23.5	13,900	5.7	72.2		3	1.0	0.19	.16	-	760	30L
58-S	5.0	19.1	35,300	25.5	14,400	6.2	78.1	1.4	2	1.0	0.18	.13	-	480	32L
58-D	15.0	19.3	36,600	26.6	15,500	6.8	87.2		2	1.0	0.14	.13	6.4	26L	14L
59-S	5.0	19.3	35,800	25.9	14,000	5.1	64.2	1.0	3	2.0	0.22	.36	5.1	160	40
60-S	5.0	18.5	35,000	25.6	14,400	4.0	49.8	2.7	3	2.0	0.19	.29	4.0	100,000H	36,000H
60-D	34.0	18.5	36,000	26.5	15,200	6.0	75.4		3	2.0	0.14	.16	-	660	100
61-S	5.0	18.2	35,600	26.2	15,100	6.1	76.1	.9	3	1.0	0.13	.16	2.4	2,600	[illegible]
61-D	33.0	18.3	35,900	26.5	15,800	6.3	79.5		1	1.0	0.17	.16	-	1,800	210
62-S	5.0	19.0	36,600	26.6	15,300	6.9	83.9	1.3	2	3.0	0.12	.13	5.4	12L	12L
63-S	5.0	18.8	37,000	26.9	15,800	6.9	87.9	1.1	2	2.0	0.12	.13	5.1	08L	02
64-S	5.0	18.8	37,300	27.0	15,900	7.0	89.3	.9	2	4.0	0.11	.13	4.4	04L	02
65-S	5.0	18.6	37,700	27.5	16,700	7.6	97.6	1.1	2	3.0	0.10	.07	4.9	02L	02
66-S	5.0	18.2	37,900	28.2	14,700	7.3	90.7	.8	3	3.0	0.12	.07	5.3	40	06L
67-S	5.0	18.0	37,200	27.4	16,400	7.4	92.5	.8	3	5.0	0.10	.10	5.4	04L	02
68-S	5.0	18.3	37,600	27.8	16,100	5.1	64.6	>5.1	4	1.0	0.12	.07	5.6	4,000	1,200
68-D	34.0	17.8	39,000	29.4	16,700	6.8	85.9		2	1.0	0.07	.03	-	600	260
69-S	5.0	18.0	39,250	29.4	19,000	7.6	93.2	.7	2	1.0	0.09	.03	3.3	48L	02L
69-D	31.0	17.9	39,200	29.4	15,800	7.6	96.4		2	1.0	0.07	.03	-	60L	06L

APPENDIX F

FEDERAL WATER QUALITY ADMINISTRATION SURVEY OF
NORTH SHORE OF LONG ISLAND SOUND
JULY 1970

STATION DESCRIPTION
ENVIRONMENTAL PROTECTION AGENCY
LONG ISLAND SOUND SURVEY
JULY 1970

Station	Location	Sampling Depth, A (MLW)
NS1	Throggs Neck Bridge	5
2	Off Stepping Stones	5
2A	Off Hewlett Pt.	5
3	Eastchester Bay	4
4	" "	3
5	Hutchinson River	3
6	Off Orchard Beach	5
7	Off Glen Island	5
8	Echo Bay	5
9	Larchmont Harbor	5
9A	Larchmont Harbor	1
10	Mamaroneck Harbor	5
10A	Milton Harbor	3
11	Mamaroneck Harbor	5
12	Off Peningo Neck	5
13	Off Rye Beach	5
14	Byram River	5
15	Portchester Harbor	5
16	Captain Harbor	5
17	Greenwich Harbor	5
18	Captain Harbor	5
19	Cos Cob Harbor	3
20	" " "	3
21	Greenwich Cove	5
22	Off Greenwich Pt.	5
23	Stamford Harbor	5
24	" "	5
25	Stamford Harbor (W. Branch)	5
26	Stamford Harbor (E. Branch)	5
27	Westcott Cove	5
28	Cove Harbor	5
29	Off Smith Reef	5
30	Sheffield Harbor	5
31	Five Mile River	5
32	Sheffield Harbor	5
33	" "	5
34	Norwalk River	5
35	Cockenoe Harbor	5
36	Saugatuck River	5
37	" "	5

List and Location of Sampling Stations

Station	Location	Sampling Depth, A (MLW)
38	Off Frost Pt.	5
39	Southport Harbor	5
40	Off Pine Creek Pt.	5
41	Black Rock Harbor	5
42	Ash Creek	3
43	Cedar Creek	5
44	Bridgeport Harbor	5
45	Yellow Mill Cannel	5
46	Bridgeport Harbor	5
47	" "	5
48	" "	5
49	Off Lordship Beach	5
50	Housatonic River (mouth)	5
51	Housatonic River	5
52	" "	5
53	" "	5
54	" "	5
55	Off Charles Island	5
56	The Gulf	5
57	Milford Harbor	5
58	Off Pond Pt.	5
59	Off Oyster R. Pt.	5
60	Off New Haven Harbor	5
61	Off West Haven	5
62	West River	5
63	Quinnipaic River	2
64	" "	5
65	New Haven Harbor	5
66	" " "	5
67	" " "	5
68	Off Lighthouse Pt.	5
69	New Haven Harbor Ent. Ch.	5
70	Branford Harbor	5
71	Branford River	5
72	N.W. of the Thimbles	5
73	Off Sachem Head	5
74	Guildford Island	4
75	Madison Reef	5
76	Clinton Harbor	5
77	" "	4
78	Duck Island Roads	5
79	Patchogue River	5
80	Westbrook Harbor	5
81	Off Cornfield Pt.	5
82	Connecticut River (mouth)	5

List and Location of Sampling Stations

Station	Location	Sampling Depth, A (MLW)
83	Connecticut River (mouth)	5
84	Connecticut River	5
85	" "	5
86	Off Sound View	5
87	Off Giants Neck	5
88	Off Black Pt.	5
89	Niantic Bay	5
90	Niantic River	5
91	Jordan Cove	5
92	Off Goshen Pt.	5
93	New London Harbor	5
94	" " "	5
95	" " "	5
97	" " "	5
98	Thames River	5
99	" "	5
100	" "	5
101	" "	5
102	" "	5
103	" "	5
104	" "	5
105	Pine Island Channel	5
106	Mumford Cove	5
107	Fishers Island Sound	5
108	Bebee Cove	5
109	Mystic River	5
110	Mystic River	5
111	Fishers Island Sound	5
112	" " "	5
113	Stonington Harbor	5
114	" "	5
115	Off Stonington Pt.	3
116	Little Narragansett Bay	4
117	Pawtucket River	5
118	" "	5

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970

STAT	DATE	TIME	DEPTH	LAB NO. 00008	AIR TEMP CENT 00020	WATER TEMP CENT 00010	DO MG/L 00300	BOD 5 DAY MG/L 00310	PH SU 00400	TURB JKSN JU 00070	COND A-25C UMHOS 00095	SALIN G/L 70305	CL MG/L 00940
NS1	07-19-70	0840	005	2277	N	18.70	2.70	N	7.40	3	37700	24	14700
NS2	07-19-70	0850	005	2278	N	17.90	3.60	N	7.70	2	38400	24	15300
NS2A	07-19-70	0915	005	2279	N	18.40	4.90	N	8.00	2	38600	25	14700
NS3	07-19-70	0945	005	2281	N	18.10	4.30	N	8.00	3	38600	25	15000
NS4	07-19-70	1135	005	2283	28.00	19.80	5.40	N	7.60	5	38400	24	14700
NS5	07-19-70	1120	005	2282	28.00	22.00	0.60	N	8.00	10	36300	23	13300
NS6	07-19-70	0920	005	2280	N	17.60	6.50	N	8.10	2	39300	25	15300
NS7	07-19-70	1000	005	2286	29.00	18.30	5.30	N	7.70	2	38300	24	15100
NS8	07-19-70	0940	005	2285	N	18.30	6.10	2.20	7.70	2	38200	24	15000
NS9	07-19-70	1030	005	2287	30.50	17.60	6.20	N	8.00	2	38700	25	14700
NS9A	07-19-70	1045	005	2288	26.90	18.10	9.80	3.20	8.00	3	38500	24	15000
NS10	07-19-70	1115	005	2289	32.00	17.30	5.80	N	8.00	2	38600	25	15300
NS10A	07-19-70	1130	005	2290	N	19.40	N	2.00	8.00	2	38400	24	15100
NS11	07-19-70	1255	005	2291	N	19.80	9.30	3.50	8.10	3	38300	24	14700
NS12	07-18-70	0900	005	2270	N	18.30	6.50	N	7.80	2	39800	25	14300
NS13	07-18-70	0915	005	2271	N	17.40	5.80	N	7.90	2	40000	25	14300
NS14	07-18-70	0940	005	2273	N	18.50	7.20	3.00	8.00	2	40100	25	14400
NS15	07-18-70	0930	005	2272	N	18.00	5.80	N	7.90	2	39800	25	14300
NS16	07-18-70	1030	005	2276	N	17.90	5.90	N	8.10	2	40500	26	14900
NS17	07-18-70	1015	005	2275	N	18.60	6.90	N	8.00	3	40000	25	14700
NS18	07-18-70	1000	005	2274	N	15.80	4.60	N	7.70	2	42000	27	15200
NS19	07-18-70	0840	005	2261	38.70	18.90	7.00	N	7.70	2	38700	25	15400
NS20	07-18-70	0820	005	2260	27.70	19.60	6.10	N	7.80	3	38500	24	15100
NS21	07-18-70	0910	005	2262	23.30	18.10	6.10	N	7.70	3	38800	25	15800
NS22	07-18-70	0940	005	2263	33.00	18.70	7.90	N	7.90	3	38900	25	16000
NS23	07-18-70	1005	005	2264	34.50	18.20	7.10	N	7.90	2	39400	25	14700
NS24	07-18-70	1010	005	2265	28.50	18.90	7.00	N	8.00	3	38700	24	15600
NS25	07-18-70	1100	005	2267	39.50	20.30	6.40	3.10	7.70	4	37900	24	14300
NS26	07-18-70	1030	005	2266	34.20	20.50	N	3.30	7.90	5	38400	25	14700
NS27	07-17-70	1410	005	2328	N	18.20	7.20	8.80J	8.50	2	40200	26	15000
NS28	07-17-70	1340	005	2326	N	18.30	7.00	N	8.30	3	40600	26	14500
NS29	07-17-70	1355	005	2327	N	19.50	10.30	N	8.70	3	40100	26	14500
NS30	07-17-70	1250	005	2324	N	19.00	8.10	N	7.90	2	40000	25	14500
NS31	07-17-70	1315	005	2325	N	18.00	7.50	N	8.30	3	40200	25	14500
NS32	07-17-70	0950	005	2318	N	18.50	8.20	N	8.10	4	40500	26	15600
NS33	07-17-70	1045	005	2320	N	21.00	6.10	3.00	8.10	6	39100	25	14500
NS34	07-17-70	1030	005	2319	N	21.40	3.80	3.00	7.10	5	39100	25	14300
NS35	07-17-70	1215	005	2321	N	18.90	6.50	N	8.10	4	40000	25	15300
NS36	07-17-70	1200	005	2323	N	17.60	5.40	N	8.00	5	40200	25	14300
NS37	07-17-70	1140	005	2322	N	21.30	5.50	N	8.00	5	38100	25	14100
NS38	07-17-70	0740	005	2331	25.70	17.30	6.00	N	7.40	2	39100	25	14500
NS39	07-17-70	0725	005	2330	22.50	17.50	6.00	N	7.40	3	38800	25	14300
NS40	07-17-70	0755	005	2332	21.00	16.50	5.50	N	7.70	2	39400	25	15000
NS41	07-17-70	0825	005	2333	21.50	20.30	6.60	N	7.90	2	38700	25	14500
NS42	07-17-70	0845	005	2334	22.50	19.10	5.20	N	7.80	3	38800	25	14300
NS43	07-17-70	0900	005	2335	24.50	19.20	5.10	N	7.70	3	38600	24	14300
NS44	07-17-70	1100	005	2255	30.00	21.80	5.40	1.60J	8.00	2	38100	24	14500
NS45	07-17-70	1040	005	2340	22.50	21.20	6.10	1.90J	7.90	3	38000	24	14500
NS45A	07-17-70	1020	005	2339	26.50	20.80	5.50	N	7.80	3	38400	24	15100

REMARKS-
N=NO DATA AVAILABLE. J=ESTIMATED VALUE. K=LESS THAN. L=GREATER THAN. -=MINUS TEMP

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970

STAT	DATE	TIME	DEPTH	LAB NO. 00008	CHLR-PHL A MG/M3 32230	NO3-N MG/L 00620	T KJL N MG/L 00625	PHS-T P-WET MG/L 00665	T ORG C MG/L 00680	CU UG/L 01040	CR UG/L 01030	ZINC UG/L 01090	LEAD UG/L 01049
NS1	07-19-70	0840	005	2277	3.00	0.18	1.03	0.28	4.00	N	N	N	N
NS2	07-19-70	0850	005	2278	5.80	0.14	1.04	0.23	4.00	N	N	N	N
NS2A	07-19-70	0915	005	2279	7.80	0.14	0.48	0.22	4.00	N	N	N	N
NS3	07-19-70	0945	005	2281	N	0.09	1.00	0.22	4.00	N	N	N	N
NS4	07-19-70	1135	005	2283	13.80	0.12	0.68	0.28	5.00	N	N	N	N
NS5	07-19-70	1120	005	2282	10.60	0.18	1.15	0.52	6.00	N	N	N	N
NS6	07-19-70	0920	005	2280	7.40	0.09	0.88	0.18	4.00	N	N	N	N
NS7	07-19-70	1000	005	2286	11.80	0.09	0.69	0.17	3.00	N	N	N	N
NS8	07-19-70	0940	005	2285	7.30	0.09	0.61	0.16	3.00	N	N	N	N
NS9	07-19-70	1030	005	2287	6.30	0.07	1.43	0.13	3.00	N	N	N	N
NS9A	07-19-70	1045	005	2288	19.10	0.07	0.59	0.11	3.00	N	N	N	N
NS10	07-19-70	1115	005	2289	5.30	0.09	1.31	0.12	2.00	N	N	N	N
NS10A	07-19-70	1130	005	2290	8.80	0.07	0.73	0.13	4.00	N	N	N	N
NS11	07-19-70	1255	005	2291	24.10	0.07	0.96	0.12	4.00	N	N	N	N
NS12	07-18-70	0900	005	2270	8.80	0.07	0.64	0.14	4.00	N	N	N	N
NS13	07-18-70	0915	005	2271	5.60	0.09	0.71	0.12	4.00	N	N	N	N
NS14	07-18-70	0940	005	2273	8.10	0.07	0.74	0.12	4.00	160	100K	50K	300K
NS15	07-18-70	0930	005	2272	8.10	0.07	0.83	0.11	3.00	N	N	N	N
NS16	07-18-70	1030	005	2276	8.60	0.07	1.28	0.11	4.00	N	N	N	N
NS17	07-18-70	1015	005	2275	7.50	0.05	0.66	0.11	4.00	N	N	N	N
NS18	07-18-70	1000	005	2274	5.10	0.05	0.56	0.14	2.00	N	N	N	N
NS19	07-18-70	0840	005	2261	16.00	0.07	0.39	0.12	4.00	N	N	N	N
NS20	07-18-70	0820	005	2260	11.80	0.09	0.74	0.14	4.00	N	N	N	N
NS21	07-18-70	0910	005	2262	6.10	0.07	0.89	0.14	3.00	N	N	N	N
NS22	07-18-70	0940	005	2263	4.50	0.07	0.65	0.13	4.00	N	N	N	N
NS23	07-18-70	1005	005	2264	7.00	0.05	0.22	0.11	4.00	N	N	N	N
NS24	07-18-70	1010	005	2265	7.40	0.05	0.49	0.13	4.00	N	N	N	N
NS25	07-18-70	1100	005	2267	33.30	0.09	N	0.21	5.00	100K	100K	500K	300K
NS26	07-18-70	1030	005	2266	13.00	0.01	0.34	0.22	5.00	200	100K	50	300K
NS27	07-17-70	1410	005	2328	10.90	0.04	N	0.08	4.00	100K	100K	500K	300K
NS28	07-17-70	1340	005	2326	9.20	0.04	0.76	0.07	4.00	N	N	N	N
NS29	07-17-70	1355	005	2327	14.80	0.05	0.86	0.07	4.00	N	N	N	N
NS30	07-17-70	1250	005	2324	8.00	0.04	0.76	0.07	7.00	N	N	N	N
NS31	07-17-70	1315	005	2325	9.20	0.04	0.76	0.08	4.00	N	N	N	N
NS32	07-17-70	0950	005	2318	16.00	0.04	0.18	0.10	6.00	N	N	N	N
NS33	07-17-70	1045	005	2320	10.20	0.08	0.08	0.18	4.00	N	N	N	N
NS34	07-17-70	1030	005	2319	10.50	0.09	0.06	0.20	4.00	N	N	N	N
NS35	07-17-70	1215	005	2321	8.50	0.08	0.10	0.08	4.00	N	N	N	N
NS36	07-17-70	1200	005	2323	7.30	0.04	0.84	0.10	4.00	N	N	N	N
NS37	07-17-70	1140	005	2322	8.40	0.08	0.06	0.12	4.00	N	N	N	N
NS38	07-17-70	0740	005	2331	8.80	0.11	0.94	0.11	4.00	N	N	N	N
NS39	07-17-70	0725	005	2330	13.90	0.06	0.94	0.08	4.00	N	N	N	N
NS40	07-17-70	0755	005	2332	N	N	0.58	0.07	4.00	N	N	N	N
NS41	07-17-70	0825	005	2333	12.00	0.11	3.66	0.10	4.00	N	N	N	N
NS42	07-17-70	0845	005	2334	6.70	0.03	1.02	0.13	5.00	160	100K	500K	300K
NS43	07-17-70	0900	005	2335	51.20	0.08	0.80	0.31	5.00	170	100K	500K	300K
NS44	07-17-70	1100	005	2255	10.90	0.05	0.84	0.12	5.00	120	100K	500K	300K
NS45	07-17-70	1040	005	2340	12.00	0.07	N	0.13	7.00	100K	100K	500K	300K
NS45A	07-17-70	1020	005	2339	14.30	0.08	0.46	0.15	5.00	N	N	N	N

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970

STAT	DATE	TIME	DEPTH	LAB NO. 00008	HG UG/L 71900	TCOLI MPN 100ML 31505	FCOLI MPN 100ML 31615
NS1	07-19-70	0840	005	2277	N	35000	11000
NS2	07-19-70	0850	005	2278	N	11000	1700
NS2A	07-19-70	0915	005	2279	N	3500	280
NS3	07-19-70	0945	005	2281	N	2400	1300
NS4	07-19-70	1135	005	2283	N	330	130
NS5	07-19-70	1120	005	2282	N	2400L	1600
NS6	07-19-70	0920	005	2280	N	79	33
NS7	07-19-70	1000	005	2286	N	79	23
NS8	07-19-70	0940	005	2285	N	70	70
NS9	07-19-70	1030	005	2287	N	33	33
NS9A	07-19-70	1045	005	2288	N	330	230
NS10	07-19-70	1115	005	2289	N	49	14
NS10A	07-19-70	1130	005	2290	N	46	13
NS11	07-19-70	1255	005	2291	N	170	49
NS12	07-18-70	0900	005	2270	N	330	230
NS13	07-18-70	0915	005	2271	N	1700	220
NS14	07-18-70	0940	005	2273	N	2400	180
NS15	07-18-70	0930	005	2272	N	46	13
NS16	07-18-70	1030	005	2276	N	11	2
NS17	07-18-70	1015	005	2275	N	49	7
NS18	07-18-70	1000	005	2274	N	70	2
NS19	07-18-70	0840	005	2261	N	230	33
NS20	07-18-70	0820	005	2260	N	79	49
NS21	07-18-70	0910	005	2262	N	17	4
NS22	07-18-70	0940	005	2263	N	13	5
NS23	07-18-70	1005	005	2264	N	79	22
NS24	07-18-70	1010	005	2265	N	230	130
NS25	07-18-70	1100	005	2267	2.00K	2300	790
NS26	07-18-70	1030	005	2266	2.00K	4900	490
NS27	07-17-70	1410	005	2328	N	33	8
NS28	07-17-70	1340	005	2326	N	2	2
NS29	07-17-70	1355	005	2327	N	8	8
NS30	07-17-70	1250	005	2324	N	50	2K
NS31	07-17-70	1315	005	2325	N	130	90
NS32	07-17-70	0950	005	2318	N	23	13
NS33	07-17-70	1045	005	2320	N	240	13
NS34	07-17-70	1030	005	2319	N	490	130
NS35	07-17-70	1215	005	2321	N	49	70
NS36	07-17-70	1200	005	2323	N	17	14
NS37	07-17-70	1140	005	2322	N	140	33
NS38	07-17-70	0740	005	2331	N	2	2K
NS39	07-17-70	0725	005	2330	N	110	2K
NS40	07-17-70	0755	005	2332	N	49	2K
NS41	07-17-70	0825	005	2333	N	79	14
NS42	07-17-70	0845	005	2334	2.00K	49	8
NS43	07-17-70	0900	005	2335	2.00K	220	23
NS44	07-17-70	1100	005	2255	N	4900	540
NS45	07-17-70	1040	005	2340	N	790	170
NS45A	07-17-70	1020	005	2339	N	N	N

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO. 00008	AIR TEMP CENT 00020	WATER TEMP CENT 00010	DO MG/L 00300	BOD 5 DAY MG/L 00310	PH SU 00400	TURB JKSN JU 00070	COND A-25C UMHOS 00095	SALIN G/L 70305	CL MG/L 00940
NS46	07-17-70	1010	005	2338	28.00	20.50	5.50	3.60	7.80	3	38400	24	14500
NS47	07-17-70	0950	005	2337	26.80	19.00	6.20	N	7.50	2	38700	25	14500
NS48	07-17-70	0940	005	2336	24.50	17.20	5.00	N	7.90	2	39000	25	14300
NS49	07-17-70	0805	005	2317	N	16.40	5.00	N	7.70	1	41400	26	15100
NS50	07-16-70	0825	005	2308	17.00	17.70	5.00	2.30	8.00	1	42200	27	15300
NS51	07-16-70	0845	005	2309	20.00	17.80	5.00	1.30J	8.00	1	41900	27	14700
NS52	07-16-70	0910	005	2310	20.00	17.10	4.10	1.30J	7.70	2	40900	26	14000
NS53	07-16-70	0930	005	2311	21.00	20.80	3.90	1.70J	7.60	3	24800	15	N
NS54	07-16-70	0945	005	2312	21.00	22.70	4.00	4.00	7.50	5	9700	5	3000
NS55	07-17-70	0745	005	2316	N	16.80	4.00	N	7.90	1	42000	26	15300
NS56	07-17-70	0725	005	2314	N	18.30	5.10	N	8.00	1	41200	26	15300
NS57	07-17-70	0710	005	2313	N	17.80	4.00	N	7.60	1	41500	26	14500
NS58	07-17-70	0735	005	2315	N	18.40	5.50	N	7.90	1	41800	26	15300
NS59	07-16-70	0905	005	2228	24.00	19.20	6.10	N	8.00	1	54800	26	15300
NS60	07-16-70	0920	005	2229	24.20	N	N	N	7.70	2	N	N	15300
NS61	07-16-70	0840	005	2227	21.00	19.20	5.90	N	8.20	1	40200	26	15500
NS62	07-16-70	1305	005	2306	30.50	21.40	3.50	3.10	7.60	5	36500	23	13500
NS63	07-16-70	1150	005	0515	N	23.00	2.50	6.80J	7.30	4	N	N	13300
NS64	07-16-70	1230	005	2305	26.00	21.50	2.00	2.10	7.50	6	33400	21	12300
NS65	07-16-70	1210	005	2304	26.50	26.50	1.40	1.90J	7.50	7	38400	24	14100
NS66	07-16-70	1255	005	2303	24.20	21.30	2.60	2.10	7.60	6	36100	23	13700
NS67	07-16-70	1130	005	2302	25.00	20.20	4.20	3.10	8.00	5	38700	25	14500
NS68	07-16-70	1020	005	2301	N	19.70	5.50	N	7.80	2	39700	26	15200
NS69	07-16-70	0950	005	2230	N	19.40	5.70	N	7.60	2	40100	25	16000
NS70	07-15-70	0745	005	2245	19.00	19.10	6.60	N	7.90	17	42300	27	15400
NS71	07-15-70	0730	005	2244	19.00	20.00	6.70	N	7.80	2	41700	27	15600
NS72	07-15-70	0810	005	2246	19.00	19.50	7.80	N	8.00	1	41900	27	15600
NS73	07-15-70	0840	005	2247	20.00	19.20	7.30	N	8.00	2	42300	27	15600
NS74	07-15-70	0900	005	2248	20.00	19.30	7.60	N	8.10	3	42500	27	16000
NS75	07-15-70	1015	005	2249	21.00	19.00	8.10	N	8.10	2	42500	27	16400
NS76	07-15-70	1240	005	2254	26.00	18.40	8.50	N	8.10	2	43600	28	16100
NS77	07-15-70	1225	005	2253	28.00	20.50	8.00	2.60	8.20	5	41400	27	15100
NS78	07-15-70	1155	005	2252	26.50	17.80	8.20	N	8.20	1	43600	28	16100
NS79	07-15-70	1140	005	2251	24.50	19.30	8.30	N	8.00	2	41800	27	14700
NS80	07-15-70	1115	005	2250	23.00	18.00	8.10	N	7.90	2	41900	27	16200
NS81	07-15-70	0930	005	2222	26.00	18.10	8.00	N	7.50	2	40500	26	15600
NS82	07-15-70	1045	005	2223	23.50	17.70	7.50	N	7.50	2	41900	27	16000
NS83	07-15-70	1000	005	2224	27.50	18.60	7.50	N	7.90	2	38700	25	15200
NS84	07-15-70	1025	005	2225	30.00	19.20	7.10	N	7.50	4	35300	22	10700
NS85	07-15-70	1045	005	2226	29.50	22.30	5.50	N	7.40	5	20400	12	7300
NS86	07-15-70	0955	005	2221	22.50	17.50	7.80	N	7.90	1	44100	27	16400
NS87	07-15-70	0805	005	2220	21.70	17.70	8.50	N	8.30	1	42600	27	16800
NS88	07-15-70	0845	005	2219	21.00	17.10	8.00	N	8.10	1	43300	28	16800
NS89	07-15-70	0700	005	2217	23.20	17.00	7.70	N	8.10	1	44600	28	16600
NS90	07-15-70	0720	005	2218	N	17.80	7.90	N	8.10	1	44700	28	16800
NS91	07-15-70	0645	005	2216	20.20	16.50	7.50	N	8.00	1	43800	28	16900
NS92	07-14-70	0805	005	2203	26.00	16.40	7.60	N	8.00	1	45200	28	17000
NS93	07-14-70	0845	005	2204	26.20	17.00	8.30	N	7.80	1	43300	28	17400
NS94	07-14-70	0915	005	2205	28.00	17.80	6.40	7.90L	7.60	2	42500	27	16200

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO.	CHLR-PHL A MG/M3	NO3-N MG/L	T KJL N MG/L	PHS-T P-WET MG/L	T ORG C MG/L	CU UG/L	CR UG/L	ZINC UG/L	LEAD UG/L
				00008	32230	00620	00625	00665	00680	01040	01030	01090	01049
NS46	07-17-70	1010	005	2338	11.70	0.04	0.72	0.11	5.00	120	100K	500K	300K
NS47	07-17-70	0950	005	2337	8.10	0.04	1.52	0.07	3.00	N	N	N	N
NS48	07-17-70	0940	005	2336	6.70	0.04	0.68	0.07	4.00	N	N	N	N
NS49	07-17-70	0805	005	2317	4.30	0.03	0.39	0.06	2.00	N	N	N	N
NS50	07-16-70	0825	005	2308	3.70	0.10	0.70	0.04	3.00	150	100K	90	300K
NS51	07-16-70	0845	005	2309	4.90	0.10	0.72	0.21	4.00	170	100K	80	300K
NS52	07-16-70	0910	005	2310	5.90	0.10	0.82	0.33	4.00	100K	100K	50K	300K
NS53	07-16-70	0930	005	2311	N	N	1.38	N	N	210	100K	130	300K
NS54	07-16-70	0945	005	2312	23.70	0.47	2.30	0.08	6.00	230	100K	120	300K
NS55	07-17-70	0745	005	2316	2.20	0.03	1.61	0.07	4.00	N	N	N	N
NS56	07-17-70	0725	005	2314	5.00	0.03	0.86	0.09	4.00	N	N	N	N
NS57	07-17-70	0710	005	2313	5.30	0.03	0.52	0.11	2.00	N	N	N	N
NS58	07-17-70	0735	005	2315	8.40	0.04	1.16	0.11	3.00	N	N	N	N
NS59	07-16-70	0905	005	2228	6.50	0.09	0.88	0.05	3.00	N	N	N	N
NS60	07-16-70	0920	005	2229	3.60	0.12	1.50	0.03	4.00	N	N	N	N
NS61	07-16-70	0840	005	2227	3.90	0.09	0.60	0.07	4.00	N	N	N	N
NS62	07-16-70	1305	005	2306	14.40	0.18	1.28	0.01	5.00	100K	100K	60	300K
NS63	07-16-70	1150	005	0515	14.10	0.32	1.60	0.07	5.00	100K	100K	60	300K
NS64	07-16-70	1230	005	2305	15.20	0.28	1.90	0.01	5.00	260	100K	60	300K
NS65	07-16-70	1210	005	2304	6.10	0.10	1.34	0.03	5.00	210	100K	120	300K
NS66	07-16-70	1255	005	2303	17.10	0.16	1.82	0.03	5.00	100K	100K	60	300K
NS67	07-16-70	1130	005	2302	8.80	0.14	1.36	0.02	5.00	100K	100K	50K	300K
NS68	07-16-70	1020	005	2301	4.10	0.10	0.94	0.03	3.00	N	N	N	N
NS69	07-16-70	0950	005	2230	3.50	0.10	0.42	0.03	4.00	N	N	N	N
NS70	07-15-70	0745	005	2245	2.00	0.06	0.70	0.05	2.00	N	N	N	N
NS71	07-15-70	0730	005	2244	5.90	0.07	0.65	0.08	3.00	100K	100	120	300K
NS72	07-15-70	0810	005	2246	2.80	0.07	0.56	0.07	2.00	N	N	N	N
NS73	07-15-70	0840	005	2247	3.70	0.07	0.60	0.07	5.00	N	N	N	N
NS74	07-15-70	0900	005	2248	7.10	0.06	0.96	0.07	3.00	N	N	N	N
NS75	07-15-70	1015	005	2249	3.30	0.06	0.70	0.04	2.00	N	N	N	N
NS76	07-15-70	1240	005	2254	5.20	0.06	1.14	0.04	3.00	N	N	N	N
NS77	07-15-70	1225	005	2253	6.30	0.08	N	0.05	3.00	100K	100K	60	300K
NS78	07-15-70	1155	005	2252	5.80	0.06	0.72	0.01K	6.00	N	N	N	N
NS79	07-15-70	1140	005	2251	5.50	0.06	1.20	0.04	2.00	N	N	N	N
NS80	07-15-70	1115	005	2250	4.60	0.06	0.92	0.04	2.00	N	N	N	N
NS81	07-15-70	0930	005	2222	5.70	0.06	1.06	0.05	2.00	N	N	N	N
NS82	07-15-70	1045	005	2223	6.10	0.06	0.70	0.04	3.00	N	N	N	N
NS83	07-15-70	1000	005	2224	4.20	0.06	0.58	0.04	2.00	N	N	N	N
NS84	07-15-70	1025	005	2225	5.30	0.12	0.86	0.32	4.00	N	N	N	N
NS85	07-15-70	1045	005	2226	9.10	0.19	1.48	0.12	5.00	100K	100K	50	300K
NS86	07-15-70	0955	005	2221	2.00	0.08	0.40	0.03	4.00	N	N	N	N
NS87	07-15-70	0805	005	2220	4.30	0.08	0.46	0.04	2.00	100K	100K	50K	300K
NS88	07-15-70	0845	005	2219	1.00	0.06	0.18	0.05	2.00	N	N	N	N
NS89	07-15-70	0700	005	2217	2.20	0.05K	0.58	0.03	2.00	N	N	N	N
NS90	07-15-70	0720	005	2218	1.10	0.06	0.64	0.05	3.00	100K	100K	50K	300K
NS91	07-15-70	0645	005	2216	2.80	0.05	0.94	0.04	3.00	N	N	N	N
NS92	07-14-70	0805	005	2203	N	0.05K	0.52	0.06	1.00	N	N	N	N
NS93	07-14-70	0845	005	2204	3.10	0.05K	0.64	0.06	2.00	N	N	N	N
NS94	07-14-70	0915	005	2205	6.30	0.10	1.20	0.07	5.00	100K	100K	100	300K

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO. 00008	HG UG/L 71900	TCOLI MPN 100ML 31505	FCOLI MPN 100ML 31615
NS46	07-17-70	1010	005	2338	N	1700	170
NS47	07-17-70	0950	005	2337	N	12	2
NS48	07-17-70	0940	005	2336	N	49	2
NS49	07-17-70	0805	005	2317	N	22	20
NS50	07-16-70	0825	005	2308	N	2	2K
NS51	07-16-70	0845	005	2309	2.00K	220	17
NS52	07-16-70	0910	005	2310	2.00K	3500	2400
NS53	07-16-70	0930	005	2311	2.00K	24000L	5400
NS54	07-16-70	0945	005	2312	2.00K	24000L	1700
NS55	07-17-70	0745	005	2316	N	11	70
NS56	07-17-70	0725	005	2314	N	170	33
NS57	07-17-70	0710	005	2313	N	79	11
NS58	07-17-70	0735	005	2315	N	23	50
NS59	07-16-70	0905	005	2228	N	80	50
NS60	07-16-70	0920	005	2229	N	23	8
NS61	07-16-70	0840	005	2227	N	220	17
NS62	07-16-70	1305	005	2306	4.00	24000L	5400
NS63	07-16-70	1150	005	0515	2.00K	9200	350
NS64	07-16-70	1230	005	2305	2.00K	13000	3300
NS65	07-16-70	1210	005	2304	N	5400	3500
NS66	07-16-70	1255	005	2303	N	16000	3500
NS67	07-16-70	1130	005	2302	N	3300	3300
NS68	07-16-70	1020	005	2301	N	170	17
NS69	07-16-70	0950	005	2230	N	280	49
NS70	07-15-70	0745	005	2245	N	13	8
NS71	07-15-70	0730	005	2244	N	33	13
NS72	07-15-70	0810	005	2246	N	11	5
NS73	07-15-70	0840	005	2247	N	2K	2K
NS74	07-15-70	0900	005	2248	N	11	2K
NS75	07-15-70	1015	005	2249	N	2K	2K
NS76	07-15-70	1240	005	2254	N	5	2K
NS77	07-15-70	1225	005	2253	N	110	70
NS78	07-15-70	1155	005	2252	N	7	2
NS79	07-15-70	1140	005	2251	N	79	33
NS80	07-15-70	1115	005	2250	N	21	7
NS81	07-15-70	0930	005	2222	N	33	5
NS82	07-15-70	1045	005	2223	N	13	5
NS83	07-15-70	1000	005	2224	N	130	17
NS84	07-15-70	1025	005	2225	N	70	22
NS85	07-15-70	1045	005	2226	N	79	33
NS86	07-15-70	0955	005	2221	N	2	2K
NS87	07-15-70	0805	005	2220	N	2	2K
NS88	07-15-70	0845	005	2219	N	13	5
NS89	07-15-70	0700	005	2217	N	17	7
NS90	07-15-70	0720	005	2218	N	33	11
NS91	07-15-70	0645	005	2216	N	33	33
NS92	07-14-70	0805	005	2203	N	79	49
NS93	07-14-70	0845	005	2204	N	33	33
NS94	07-14-70	0915	005	2205	N	5400	1100

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO. 00008	AIR TEMP CENT 00020	WATER TEMP CENT 00010	DO MG/L 00300	BOD 5 DAY MG/L 00310	PH SU 00400	TURB JKSN JU 00070	COND A-25C UMHOS 00095	SALIN G/L 70305	CL MG/L 00940
NS95	07-14-70	0920	005	2206	25.60	17.90	7.00	2.70	7.90	3	40600	26	14700
NS97	07-14-70	0940	005	2207	26.60	17.60	7.20	2.90	8.00	2	40800	26	14700
NS98	07-14-70	0955	005	2208	26.50	19.70	6.60	2.50	8.00	3	33100	24	14100
NS99	07-14-70	1020	005	2209	25.90	20.30	5.10	4.10	7.40	5	35100	22	12300
NS100	07-14-70	1035	005	2210	26.70	23.60	4.20	4.30	7.30	5	35500	23	12700
NS101	07-14-70	1100	005	2211	30.10	20.20	7.00	3.30	7.50	4	32400	19	10100
NS102	07-14-70	1115	005	2212	28.60	20.60	8.60	7.30	7.40	4	30500	19	8300
NS103	07-14-70	1135	005	2213	27.20	21.70	7.00	3.70	7.20	5	25700	16	13700
NS104	07-14-70	1150	005	2214	27.50	23.10	5.40	3.20	7.10	4	N	1	3000
NS105	07-14-70	0735	005	2202	26.10	16.90	7.80	N	7.80	2	43900	28	16800
NS106	07-14-70	1240	005	2243	26.00	17.20	8.20	N	8.20	2	56200	37	16800
NS107	07-14-70	1215	005	2242	26.00	17.70	8.10	N	8.10	1	54200	37	16800
NS108	07-14-70	1155	005	2241	26.00	21.90	8.70	N	8.30	2	51900	34	16800
NS109	07-14-70	1140	005	2240	26.00	22.60	8.30	N	8.10	2	49900	32	16200
NS110	07-14-70	1125	005	2239	24.50	23.50	7.60	N	8.00	2	47800	31	15800
NS111	07-14-70	1005	005	2238	25.00	17.40	8.00	N	8.00	1	53200	35	17600
NS112	07-14-70	0945	005	2237	24.00	17.90	8.30	N	7.90	1	65000	36	17200
NS113	07-14-70	0925	005	2236	23.00	18.10	8.40	0.80J	7.90	1	48000	31	17600
NS114	07-14-70	0905	005	2235	22.00	20.70	7.90	2.20	8.10	1	47800	31	17600
NS115	07-14-70	0845	005	2234	22.00	20.30	8.10	1.20J	7.90	1	44400	20	15600
NS116	07-14-70	0830	005	2233	21.00	19.50	8.20	N	8.10	1	56100	37	17000
NS117	07-14-70	0815	005	2232	20.50	19.70	7.70	1.40J	7.70	1	56200	37	16800
NS118	07-14-70	0800	005	2231	20.00	20.70	6.10	1.80J	7.30	2	54400	36	15600

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO. 00008	CHLR- PHL A MG/M3 32230	NO3-N MG/L 00620	T KJL N MG/L 00625	PHS-T P-WET MG/L 00665	T ORG C MG/L 00680	CU UG/L 01040	CR UG/L 01030	ZINC UG/L 01090	LEAD UG/L 01049
NS95	07-14-70	0920	005	2206	6.20	0.06	0.90	0.09	3.00	100K	100K	50K	300K
NS97	07-14-70	0940	005	2207	11.60	0.09	0.88	0.08	2.00	100K	100K	50	300K
NS98	07-14-70	0955	005	2208	12.10	0.09	0.94	8.00	2.00	100K	100K	50K	300K
NS99	07-14-70	1020	005	2209	21.60	0.10	1.54	0.08	4.00	100K	100K	50K	300K
NS100	07-14-70	1035	005	2210	34.30	0.12	1.10	0.10	4.00	100K	100K	50K	300K
NS101	07-14-70	1100	005	2211	15.80	0.15	1.28	0.12	5.00	100K	100K	50K	300K
NS102	07-14-70	1115	005	2212	88.80	0.18	1.20	0.13	4.00	100K	100K	50K	300K
NS103	07-14-70	1135	005	2213	20.00	0.12	0.86	0.15	2.00	100K	100K	50K	300K
NS104	07-14-70	1150	005	2214	N	0.44	1.90	0.17	5.00	100K	100K	50L	300K
NS105	07-14-70	0735	005	2202	2.40	0.05	0.70	0.06	N	N	N	N	N
NS106	07-14-70	1240	005	2243	3.90	0.05K	0.44	0.08	1.00	100K	100K	50K	300K
NS107	07-14-70	1215	005	2242	3.10	0.05K	0.50	0.08	2.00	N	N	N	N
NS108	07-14-70	1155	005	2241	3.80	0.06	0.96	0.09	2.00	N	N	N	N
NS109	07-14-70	1140	005	2240	7.60	0.09	0.70	0.11	2.00	100K	100K	50K	300K
NS110	07-14-70	1125	005	2239	8.70	0.08	0.92	0.17	2.00	100K	100K	50K	300K
NS111	07-14-70	1005	005	2238	3.80	0.05K	0.74	0.07	2.00	N	N	N	N
NS112	07-14-70	0945	005	2237	3.60	0.05K	0.40	0.07	4.00	N	N	N	N
NS113	07-14-70	0925	005	2236	2.70	0.05K	0.34	0.08	1.00	100K	100K	50K	300K
NS114	07-14-70	0905	005	2235	13.60	0.06	0.34	0.08	2.00	110L	100K	50K	300K
NS115	07-14-70	0845	005	2234	2.20	0.06	0.16	0.09	2.00	210L	100K	130	300K
NS116	07-14-70	0830	005	2233	1.60	0.05K	0.30	0.10	2.00	N	N	N	N
NS117	07-14-70	0815	005	2232	4.30	0.06	0.36	0.11	2.00	100K	100K	50K	300K
NS118	07-14-70	0800	005	2231	N	0.15	0.60	0.12	2.00	220L	100K	180L	300K

DATA, ENVIRONMENTAL PROTECTION AGENCY
SURVEY OF LONG ISLAND SOUND, NORTH SHORE, JULY 1970 (Cont'd.)

STAT	DATE	TIME	DEPTH	LAB NO.	HG UG/L	TCOLI MPN 100ML	FCOLI MPN 100ML
				00008	71900	31505	31615
NS95	07-14-70	0920	005	2206	N	1600	920
NS97	07-14-70	0940	005	2207	N	1300	170
NS98	07-14-70	0955	005	2208	N	790	240
NS99	07-14-70	1020	005	2209	N	24000L	24000L
NS100	07-14-70	1035	005	2210	N	9200	2400
NS101	07-14-70	1100	005	2211	N	3500	940
NS102	07-14-70	1115	005	2212	N	24000L	1400
NS103	07-14-70	1135	005	2213	N	24000L	5400
NS104	07-14-70	1150	005	2214	N	24000L	9200
NS105	07-14-70	0735	005	2202	N	33	33
NS106	07-14-70	1240	005	2243	N	8	2
NS107	07-14-70	1215	005	2242	N	17	4
NS108	07-14-70	1155	005	2241	N	79	11
NS109	07-14-70	1140	005	2240	N	540	350
NS110	07-14-70	1125	005	2239	N	350	130
NS111	07-14-70	1005	005	2238	N	2	2K
NS112	07-14-70	0945	005	2237	N	2K	2K
NS113	07-14-70	0925	005	2236	2.50	33	13
NS114	07-14-70	0905	005	2235	N	110	17
NS115	07-14-70	0845	005	2234	2.00	540	79
NS115	07-14-70	0830	005	2233	N	70	23
NS117	07-14-70	0815	005	2232	5.00	540	79
NS118	07-14-70	0800	005	2231	5.50	9200	2400

REMARKS-
N=NO DATA AVAILABLE, J=ESTIMATED VALUE, K=LESS THAN, L=GREATER THAN, -=MINUS TEMP

MR. BROMBERG: Mr. Chairman, this concludes the presentation by the Environmental Protection Agency.

MR. STEIN: The entire report will be included in the record as if read.

Are there any questions or comments?

Mr. Peloquin.

MR. PELOQUIN: I have a few questions, Mr. Chairman. The references are on pages 9 and 19 as to shellfish closure areas. The closures are due, as I understand it, to raw discharges but can also be due to the presence of treated effluents. Even though they provided complete treatment for all waste going into the receiving waters, surface waters, am I correct that this could still leave some closed areas because of the discharges?

MR. BROMBERG: Yes. Under the present criteria, a water body within a proximity of a treatment plant discharge, even though it is secondary, should be closed to shellfish.

MR. PELOQUIN: It could lead to some opening of closed areas, but there would still be closed areas regardless of the amount of treatment?

MR. BROMBERG: Yes.

MR. PELOQUIN: On page 14, Mr. Bromberg, the report makes reference to the Animal Disease Laboratory and a recommendation that wastes will go to a subsurface system.

Is there a time schedule established for that?

MR. BROMBERG: I have no time schedule at hand right now, but I can check on it and report that back to you.

MR. PELOQUIN: How about the submarine base at Groton tying into the Grotom system? Is there a time schedule on that?

MR. BROMBERG: That system is ready to connect right now. It's awaiting the extension of the Groton system.

MR. PELOQUIN: I had a question on page 15. Under your "Industrial Waste" listing of the 137 sources, you indicate here that none goes to the sound. Am I correct in assuming, where you say significant volumes of wastewater result from pickling, plating, and so on, that none of these wastes -- also the oxygen-consuming materials -- none of these is going into the sound at the present time? This is merely a description of what is in the basin, but this is not contributing to the pollution of the sound?

MR. BROMBERG: Well, it is contributing to the pollution of the sound, yes. We tried to make the decision of what was being discharged directly to the sound as opposed to harbors and embayments, and most of these discharges -- or, in fact, all of them -- are, for all practical purposes, to the harbors and embayments as opposed to the open waters of the sound.

MR. PELOQUIN: Okay. Fine. Thank you.

The report, unless I missed it, makes no mention of the degree of heat presently being discharged or the amount of thermal discharges going to the sound now. You make reference to the potential heat impact, with which I agree. I think it needs further study.

But is there anything in the report that indicates the temperature of the present discharge? If there is, I missed it.

MR. BROMBERG: No, there is not. We have data relating to the volume of water but not to the temperature of those discharges.

MR. PELOQUIN: Is there anything available that would indicate the thermal impact at the present time on the ecology due to the present thermal discharges?

MR. BROMBERG: No information that we have directly. There may be some localized studies being done through grants through universities, but I did not have it available for this report.

MR. PELOQUIN: Then with regard to the two studies that were done, one in 1969 and one in 1970, those cover two separate areas, so that, in effect, you have one survey of one area and one survey of another. Roughly what? One-week surveys? About how many samples do you estimate there were?

MR. BROMBERG: There were approximately, in round numbers, 140 stations in each of the surveys. The first survey concentrated on the open waters of the sound but did have stations located at the entrance to most of the harbors and the embayments.

The second survey concentrated on the north shore and resampled some stations that were, in effect, sampled in 1969.

MR. PELOQUIN: About how many samples altogether? Do you have any idea?

MR. BROMBERG: In total, as I said, there were approximately about 140 stations in each survey. Each one was sampled once.

MR. PELOQUIN: Once?

MR. BROMBERG: Right.

MR. PELOQUIN: Thank you. Now, on page 29, on your summary, I don't quite agree with the statement -- I don't think you read that particular comment -- that pollution is occurring by default. You say in the last sentence, "These conditions which are now occurring in the sound are occurring by default rather than by design. . ." I don't completely agree with that statement.

I feel the States are moving. And I agree there are some polluters in default with their schedules. But these are being subject to the due processes, as I am sure will be brought out by my fellow conferees.

But just for the record I wanted to indicate that I don't completely agree with that statement.

MR. BROMBERG: The statement was not intended to indicate that there is default on the part of the State agencies. It is in reference to the sentence above that, indicating that quality is deteriorating, and we are not designing this deterioration. It's happening by default rather than by design.

So it's referring to the deterioration, not to the programs within each of the States.

MR. PELOQUIN: Thank you.

No further questions, Mr. Chairman.

MR. STEIN: Are there any other questions?

MR. GLENN: I'd like to carry this a little bit further. On page 10, on the shellfish beds closed, let's take the ones in Connecticut. I think it indicates that most of these are urban areas, and the indication is that if the water quality was being met these shellfish beds would be opened. Referring to the federally approved plans, implementation plans, for water quality for the State of Connecticut, do you think that all these here with the major urban areas would be open if those implementation plans of the treatment plants with secondary treatment with disinfection were completed today?

MR. BROMBERG: All of them probably would not be opened, as Mr. Peloquin said.

MR. GLENN: Would any of them be open where there is an urban area?

MR. BROMBERG: Depending on the location of the treatment plant discharge, some way, and some may not.

MR. GLENN: Do you feel if you met your bacterial standard for coliform that this would effectively kill the viruses too?

MR. BROMBERG: Could you repeat the question, sir?

MR. GLENN: I said do you feel that the effect of disinfection where we use coliform standards would kill the viruses so you would be able to open these if any of the waters of this infected or disinfected effluent reached into the shellfish bed areas?

MR. BROMBERG: Well, our shellfish standards are now based on a total coliform count, not on a virus count. I don't have precise data to indicate whether chlorination would in fact kill viruses or not. So I would suspect we would still have some contamination of the beds.

MR. GLENN: So that this business of closed shellfish beds I think is giving a false indication that they would be open. And I thought that the way this was expressed it is giving indication they will be open if these water quality standards are met, and I don't think they would be open. And I think this should be made a part of the record.

MR. STEIN: Well, I think you have raised a very interesting point, Mr. Glenn, because this has happened nationally, all over. We have 300 areas where we have shellfish beds closed.

If you are pointing out that the Connecticut standards as approved by the Federal Government are not going to be sufficient to open these beds, I think we are just going to have to look at these standards again and see if what is in order is a higher degree of treatment than that which Connecticut has been asking in the past.

I think we should be grateful to you for pointing that out to Connecticut and to us.

MR. GLENN: I think the question in many areas is not why the shellfish beds are being closed recently. It's why they weren't closed about 25 years ago.

MR. STEIN: That may be. But if we have to open them-- And, by the way, I think your question is one that has been put to me. And I just don't think it's likely. I think, one, we may need revision of the shellfish standard on how we are going to consider a shellfish bed being open or not. I think when that coliform standard was set of 70 or less, no one was really thinking in terms of viruses. Or even if we were thinking in terms of viruses, we couldn't measure them.

But the issue here is that if we are going to open shellfish beds in areas where you have large centers of population particularly -- and this isn't just in Long Island Sound -- we may have to revise our thinking on the kind of treatment we are going to require. This may be a much, much higher degree of treatment than we ordinarily consider with secondary treatment or I think what Mr. Peloquin referred to as complete treatment.

Our notion of "complete" may undergo a change, and our notion of what we can allow to come out in stormwater may undergo a change, or else -- I think your point is well taken -- you're not going to be able to open many shellfish beds.

MR. GLENN: I have one other -- more of a comment than a question. That is, on page 16, pertaining to recreational boating wastes, I think one of our problems that we are facing on our boating wastes is with the Federal legislation, which requires the Federal Government to come up with what they say water quality standards for the boats are, which will not go into effect for either two or five years according to whether it's new boats or old boats. The time will not start counting until we come up with these standards.

We have had a couple of false starts, and they never quite came out.

What I cannot understand is the problem anyway. I have read over most of the State standards and the Federal standards, and it doesn't say anything about whether those standards which were approved came from land or boats. So I think in most cases we already have our boat standard too if we just come out and say so.

I think this problem from boating wastes we could move on much faster if the Federal Government would say this and not keep waiting for these standards to be promulgated sometime in the future.

MR. STEIN: Do you want to comment on that, Mr. Klashman? I don't have the boating wastes now.

MR. KLASHMAN: No, the only comment I can make, Mr. Glenn, is that we did not write the law. The laws are passed by the Congress. And the law is very specific about the establishment of standards and about the two and five years.

We anticipate that something will be coming out very soon to implement this, and I can't say any more about it.

MR. STEIN: All right. Now, let me tell you in the past -- and I think Mr. Metzler has been working with us in Lake Erie -- and in Lake Michigan too -- at a conference such as this. We had, I wouldn't say "no trouble," but after a considerable amount of "give and take" and discussion between the various States concerned, which are, you know, independent States, and the Federal Government, to adopt boating requirements for those lakes I think we came up with an agreement.

All that can come out of a conference is what the States really are going to do. We all recognized that if the States were going to adopt these this would apply to relatively small pleasure boats licensed by the States. The States did adopt them, put forth regulations and, where necessary, laws.

I know, Tom, you and several others of us in this area have been wrestling with this problem of boat pollution for a long time. When you talk about the time element of either two or five years there are no real easy answers on this. Because when we get through with the pleasure boats, you are going to get these big commercial ships coming in.

This isn't a very easy problem anyway. Because how do you regulate the foreign vessels coming in? With all the problems that our merchant marine industry has, if you begin operating on an American-flag vessel and find that the next week after you put your regulation on they change their registry to one of these little countries that you know so well, I don't know what you have accomplished for water quality.

I do know we have a group in Washington that has been meeting with the States and wrestling with these problems and trying to come up with a boat or a ship regulation. I know also from past experience, even though I am not directly charged with that function, they have a very difficult task indeed.

MR. GLENN: What bothers me is I don't know what they are wrestling over. If they come up with a separate standard for the same waterway, we are going to be in real trouble.

So I think the standards have already been set for many of the waterways, and I see no reason to debate it any further. I think it just takes a little intestinal fortitude to admit this and come out and face it, and then we can work on one of the different things.

But I wasn't talking about pleasure boats. I was talking about the big ones, the small ones, and so forth.

MR. STEIN: All right. If you haven't taken your message back to the people who handle this in Washington, Tom, as I am sure you have, directly, I'll be glad to carry it for you.

Are there any other comments or questions?

MR. METZLER: A very fine presentation, Mr. Bromberg. Just a question or two. I thought it quite lucid and clear.

A very simple question though. Is the quality of waters in the sound improving or being degraded over a period of let's say the last decade or even the last shorter period if you like?

MR. BROMBERG: We have no historical data to show any real trend. About the closest to historical data that I know that exists are studies done by the Interstate Sanitation Commission over a 10-year period in the East River, western end of Long Island Sound area.

I believe the comparison of their two reports indicates -- correct me if I am wrong, Tom -- basically no change in oxygen levels, maybe a slight increase.

MR. GLENN: No, it's more than a slight increase in some areas. There was a slight increase, in some areas quite a substantial increase. But the coliform deteriorated. But we will explain that in our own statement, why this deteriorates.

MR. BROMBERG: No, we have no historical data of our own.

MR. METZLER: Commissioner Diamond, of course, mentioned the thermal discharge concern which New York has. You mentioned 17 power generating stations. Did you mean to indicate that each of these has some thermal impact upon the sound?

MR. BROMBERG: I think I indicated 17 existing and proposed as a total.

MR. METZLER: All right.

MR. BROMBERG: And we related their discharge to volume only, not to impact.

MR. METZLER: But is each of these located so that there would be some temperature rise in the waters of the sound from the cooling water from these facilities?

MR. BROMBERG: With the exception of one or two that might be located up the Connecticut River, I would think that, yes, they would have an effect on the sound.

MR. STEIN: Let me break in here. I want this for clarification, because this is a problem that we have with thermal discharges.

I think Congressman Reid recommended we take up this problem, and I think it was brought out in the questioning, I think by Mr. Peloquin, there were no specific recommendations.

But as I read this, there are 17 existing fossil fuel plants that you have listed and seven nuclear plants, one which was in operation, two which were proposed for 1975, one for 1978, one for the middle 1980's, and the other, a real big one, just proposed.

I raise this question for clarification. I say this on the basis of sad experience in other parts of the country. If you are talking in terms of plants coming in by 1975, unless we have a proposal now you are going to find that the problem is on you. It's on us now.

I would agree with Congressman Reid that we had better start thinking and coming up with a recommendation on what we are going to do about these powerplants, if anything.

For example, I don't know how far they are from contract or ordering equipment. But we're in 1971 now. If you take the leadtime that it takes to buy some of this equipment for powerplants, I suggest that the conference might consider this problem.

Do you have any comment on that or a proposal on powerplants or a suggestion on that?

MR. BROMBERG: Mr. Chairman, we would hope that this subject would be seriously considered in what we recommend as this water resources program to be carried out for Long Island Sound, that long-term planning be incorporated in this.

MR. STEIN: Maybe because I'm talking, but I don't quite get what your proposal means. I'm not making any comment. Does your proposal mean we can wait for this long-term planning study before we have to come to grips with specifics on the powerplants?

MR. BROMBERG: For the ones that are immediately considered, I would suggest that, no, we don't wait. They should be considered right now, and they are being considered.

MR. STEIN: Do you have a recommendation? I didn't hear one, and Mr. Peloquin indicated he didn't hear one either.

MR. KLASHMAN: Mr. Stein, may I make an observation?

MR. STEIN: Yes.

MR. KLASHMAN: In each of the cases of the new powerplants, the Water Quality Office of the Environmental Protection Agency is very carefully reviewing each of these, doing exactly what you are saying, to determine what we anticipate the impact will be.

We haven't had any case yet that I know of where we have not insisted on cooling towers to lessen the load in the ones that are coming up.

MR. STEIN: I'm afraid you missed my point. My point is this: We have been in this particularly -- I think it's on the record -- in the Pacific Northwest on the Columbia River, in Biscayne Bay, and in Lake Michigan. The point is I recognize that the Federal Government has come up with its recommendations. However, we have found that it is the better part of valor and makes more sense if we come up with a joint recommendation with the States and the interstate agencies concerned.

The purpose of the conference is to get this started so we have some ground rules and know how to come up with this.

I don't know whether the proposal is to go it alone as we have had to do it in the past or to use the conference device to come up with a joint recommendation. Certainly in the Biscayne Bay and in Lake Michigan we have found that this couldn't be resolved except by coming up with a joint recommendation. I am suggesting that in 1971 we're not too far removed from 1975 to get working on this right away and not wait for a long-term study or by having to come in when I get disparate reports from State agencies and Federal agencies and interstate agencies and try to reconcile them.

MR. KLASHMAN: Mr. Bromberg, the report mentioned the fact on page 17 that the overall effect of indiscriminately adding heated effluents to the sound would be detrimental. Do I gather, Mr. Bromberg, that you would add a recommendation, on a thermal ---

MR. STEIN: You may want to think about it. I'm not pushing you now. I think you may want to. I think Mr. Peloquin said that the report was deficient in this area on recommendation.

MR. KLASHMAN: Why don't we just agree we will put such a recommendation in? I think all the conferees are agreed.

MR. STEIN: All right.

Are there any other comments or questions -- on anything, not just this?

MR. CURRY: I'll keep on the subject.

MR. STEIN: Good.

MR. CURRY: You indicated that if the Federal Government wanted to get involved in this you didn't want to go in alone. As far as Connecticut is concerned, we have been in this business of controlling thermal discharges for six or seven years, and we have been alone. So if you join with us, you won't be alone. We'll be already there.

It is a serious problem.

I would go back to one point and say I am a little bit discouraged with some of the statements you made that indicated the attitude of such an impossibility to control sewage discharges from large ships.

MR. STEIN: I didn't say that at all.

MR. CURRY: You made it sound so difficult that I was discouraged.

MR. STEIN: No, I don't think it's difficult to do this. I think the jurisdictional problems are difficult. I think physically --

MR. CURRY: I'm not worrying about the kind of difficulty but the expression that it was so seriously difficult that maybe it isn't possible.

MR. KLASHMAN: Mr. Stein, it is my understanding that the Connecticut standards for a Class A water indicate that no water with a temperature can be increased where the increase will exceed the recommended limit on the most sensitive water use, and in no case can it exceed 85 degrees or in any case raise the normal temperature of the receiving water more than 4 degrees Fahrenheit.

And it is my understanding that in carrying this out Connecticut is requiring devices to meet this.

I'm not sure I know what the story is in New York on that, Mr. Metzler. You might want to --

MR. METZLER: If it is agreeable, Mr. Seebald will cover that when he makes his presentation for New York.

MR. STEIN: Are there any other comments or questions? And not just on this.

MR. GREGG: May I observe on this thermal problem that what we are really talking about here is some short-range improvements, improvements in our short-range mechanisms for dealing with these things, and also some kind of long-range decision-making process.

I'm sure it will be brought out by witnesses appearing here today that the industry has funded a scoping study done by Battelle Memorial Institute to try to outline the metes and bounds of what was needed to be known in order to approach the question of thermal loading in the sound.

In the comprehensive study that the New England River Basins Commission will do, we will have some money we can throw into this pot for the purpose of looking at power requirements and also alternative ways of meeting them.

So this is sort of in mid-range. There are a number of things under way here that will probably be clarified today.

MR. STEIN: I understand that, Mr. Gregg. But let me indicate the problem we found ourselves with in other areas. Maybe this is what you want to do in Long Island Sound; maybe not.

In other areas we found ourselves with the problem whether we were going to permit the plants to open or not. I think this is the same question you have in a sense with these foreign ships. People need power. This is a little different kind of industry than other industries.

The question here is whether you let the powerplant open without, say, specialized cooling devices, having what they call once-through cooling in the trade, and take about five years to find out what is going to happen to the water on a survey, or whether you make your judgment before the plant opens and do this.

Now, we have been faced with that first alternative I gave you in various other waters. What I am suggesting -- if I can predict the controversy that is going to come up, as I suspect it is -- is that unless we start right now -- and I agree with these long-term and short-term objectives -- we may be faced with the same problem on Long Island Sound.

And I know if you take that alternative, you are going to have a lot of controversy, that first one, to let the plants open and study them afterward and see if they need anything.

Are there any other comments or questions?

MR. METZLER: Mr. Chairman, I was following a line of questions, perhaps a little circuitously here, but may I complete it?

MR. STEIN: Yes.

MR. METZLER: Back on the thermal problem, Mr. Bromberg, do any of these discharges that are mentioned in the tables here from powerplants contravene standards if you used the same guidelines that are used on Lake Michigan -- that is, a radius of 1,000 feet away? If the same criteria were applied as have been recommended for Lake Michigan, is there any of the places where these would be violated now?

MR. BROMBERG: We have not collected specific data around a particular plant for me to give you a clearcut answer to that.

MR. STEIN: Again for purposes of clarification, as I understand it, and I will let you technical people check me, we have two things. In Lake Michigan, the recommendation was that there be a 3-degree rise maximum plus a 1,000-foot mixing zone, plus there were temperatures to support the indigenous fish established for each month, or 3 degrees, whichever is less.

Now, there is a change. They just put this out, and if I read the green book correctly -- and I have been living with biologists for the past six months or a year since the temperature item got so hot -- there is a change in the 3 degrees when you deal with a water like Long Island Sound, a coastal water. That would be that it is a 4-degree rise in the winter and 1-1/2 degrees in the summer rather than 3.

You would still have superimposed on that, if it were applicable, the temperatures to provide the indigenous fish, and so forth.

You may want to think in those terms here. Because again, without knowing the sound and the details, in most of these other areas we have found that even though you have the discharges, as you usually have, into embayments or something of that kind, these are the particular areas which are very sensitive to fish spawning, propagation, and migration. They are precisely the critical areas you have there.

Again I would suggest that this may be applicable here as we have found in great bodies of water like Lake Michigan. I don't think if you put your mind to it that you could heat up Lake Michigan, and I don't think if you put your mind to it you could heat up Long Island Sound, no matter what you did.

The question is whether heating up some of the shallower inshore waters would so change the quality or characteristics of those waters that they would affect the ecology of the sound. I suggest we think about that.

MR. KLASHMAN: Mr. Stein, I wonder if it would be appropriate to add a recommendation here that we carry out the necessary studies and report back to the conferees on what we recommend.

MR. STEIN: How long will you take to report?

MR. KLASHMAN: I think that we will have to --

MR. STEIN: Why don't you think about that? Don't rush unless you-- I mean think about the recommendation. We're not going to close the meeting right now. Don't come up with a date off the top of your head. We still have a day or two.

Are there any other comments or questions?

MR. METZLER: I still have a couple of questions.

MR. STEIN: Yes, sir. You know, you are so intriguing I can't let you go. (Laughter) You open such intriguing vistas all the time.

Go ahead.

MR. METZLER: Thank you, Murray.

You thought it probably was desirable to add a recommendation with respect to thermal pollution. Would you also think it desirable to add one with respect to boat pollution? I'm speaking specifically about the raw sewage discharge from boats.

While it has been mentioned, it is surprising that in this laundry list we have we don't have a specific recommendation that we must stop pollution from boats, especially when we are concerned about shellfishing.

MR. BROMBERG: If I am not mistaken, New York already has legislation requiring onboard treatment devices or holding tanks for vessels.

MR. METZLER: Yes.

MR. BROMBERG: To my knowledge, I don't think Connecticut has one. We did make reference in our last recommendation that Connecticut do undertake steps to install facilities at marinas.

I admit it is lacking in that it doesn't specify action be taken with vessels, and possibly the conferees could take this under consideration.

MR. METZLER: Very good.

One more question, Mr. Bromberg. In your extensive investigations of the quality of water in the sound, did you find that trash was a problem?

MR. BROMBERG: We made observations of trash in quite a number of areas, particularly in our second survey where we did go deeper into the individual embayments. I think the text of the report dealing with quality does mention in some specific cases we observed not only floating trash but oil slick-type problems.

MR. GLENN: Let me make one more addition. We found out in the main body of water, on the trips we made out in that area last summer, we saw more trash and debris out in the main body of water than we had in previous years.

MR. METZLER: I'm very much a newcomer to boating on Long Island Sound. I must admit to that. But I'm surprised at the amount of trash that one sees. It seems to me unless that trash is controlled no one will think we have cleaned up Long Island Sound even if you can drink the water.

But I really was interested in not having my opinion expressed at this point -- there will be an opportunity for that -- but to know what your evaluation of the problem was.

MR. BROMBERG: I think you're correct that the "eye" pollution is the thing that is most apparent to the public. Where there is poor aesthetic quality, there is the implication that there is poor water quality. I think this can be and should be incorporated into vessel pollution legislation as New York does have.

MR. METZLER: Do we really know what the source of this is? Does most of it come from trash discarded from vessels? Is it shore-based?

MR. BROMBERG: It may come from shore-based --

MR. METZLER: Have we made enough investigation to understand the source?

MR. BROMBERG: No, we do have none.

MR. STEIN: Let me have one more point of clarification. Your first recommendation says, "Enforcement action be initiated immediately against those sources of pollution not in compliance with federally approved water quality standards." What action do you suggest?

MR. BROMBERG: Well, as you know, Mr. Stein, our emphasis in the Federal Government is to allow the States to initiate the enforcement action since they are the prime regulatory agencies. What we are recommending here is where a waste source is not in conformance with his schedule for a good, valid reason that the State itself initiate the legal action.

MR. STEIN: In other words, are you suggesting the River and Harbor Act, 180-day Federal actions, or do you mean State actions?

MR. BROMBERG: I think the State should take the initiative to start the action. If they do not, I think we should take the initiative.

MR. STEIN: Immediately? How does that fit with your fourth point where you suggest that they give us interim dates within 30 days? How do we work that -- taking immediate enforcement action -- with giving them 30 days for interim dates?

MR. BROMBERG: Well, as you know, the Federal Government cannot initiate action unless we have a waste source listed in the water quality standards with a complete schedule. In many cases --

MR. STEIN: No, we take action under the River and Harbor Act.

MR. BROMBERG: Under the Refuse Act also.

MR. STEIN: Right.

MR. BROMBERG: But when we don't have data by which we can measure progress, we don't know whether someone is meeting his schedule or not. If there is just a final date, we don't know whether he is proceeding with the logical predecessor steps to completion. Therefore, in this case we are requesting that where we have waste sources listed that do not have interim dates these dates be submitted to the conference and be incorporated as Federal dates.

MR. STEIN: If I understand you, your use of "immediate enforcement action" means giving the States an opportunity to take enforcement action first, and your use of "immediately" means where there are no interim steps that this "immediate" will be at least 30 days when we get these interim requirements. Is that correct?

MR. BROMBERG: Yes. We are requesting the States --

MR. STEIN: All right. Thank you.

MR. PELOQUIN: On Table B-2, Mr. Chairman, the listing of Federal waste sources, I think there are 16 sources listed. Only one has an interim date. I hope that the Federal agencies will see fit to comply in the same sense of cooperation and provide interim dates for the Federal installations as is being asked of the State agencies.

MR. STEIN: Do you want to comment on that?

MR. BROMBERG: We will do our best to review the cases and see whether interim dates are warranted, Mr. Chairman.

MR. STEIN: Are there any other comments? If not, thank you very much.

MR. KLASHMAN: Wait. I --

MR. STEIN: All right.

MR. KLASHMAN: Mr. Curry, did you have anything else to say?

MR. CURRY: I don't think so.

MR. KLASHMAN: Before Mr. Bromberg leaves, while we have the report out, I would like to just raise a couple of questions about the implementation schedules.

First, as far as the Federal agencies are concerned, we will attempt to get interim dates for a schedule within the next 30 days.

If we were to turn to Table B-1 and the tables that follow, there is a listing here of municipal and industrial sources in both New York and Connecticut. First, in New York, Mr. Metzler, there are final dates here, but there are no interim dates on some of the sources of pollution. I wonder if we could request that we be furnished these interim dates -- that is, on Table B-1 -- within 30 days?

MR. METZLER: We will cover that I think in New York State's presentation, if you would be willing to put that over until Mr. Seebald makes his statement for New York.

MR. KLASHMAN: Fine. And the same for Connecticut.

MR. CURRY: We will be glad to do it to the extent it is applicable, but there are many line errors in that table.

MR. KLASHMAN: If we could have that corrected --

MR. CURRY: We will work with you to correct it.

MR. KLASHMAN: I have no other points.

MR. STEIN: Thank you very much, Mr. Bromberg. This has been very helpful as a start.

Let me indicate off the record --

(Remarks off the record.)

MR. STEIN: Back on the record.

Mr. Klashman.

MR. KLASHMAN: I would now like to call on Mr. Frank Fogarty, Chief of Operations, New England Division, Corps of Engineers.

STATEMENT OF
FRANK FOGARTY
CHIEF OF OPERATIONS DIVISION
U. S. CORPS OF ENGINEERS, NEW ENGLAND DIVISION

MR. FOGARTY: My name is Frank Fogarty. I am Chief of Operations Division of the New England Division, U. S. Army Corps of Engineers. I represent Colonel Frank P. Bane who is the Division Engineer with headquarters in Waltham, Massachusetts.

MR. STEIN: Are there any other comments? If not, thank you very much.

MR. KLASHMAN: Wait. I --

MR. STEIN: All right.

MR. KLASHMAN: Mr. Curry, did you have anything else to say?

MR. CURRY: I don't think so.

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MR. KLASHMAN: Fine. And the same for Connecticut.

Frank Fogarty

The District Engineer of New York, Colonel Barnett, also has staff representatives here in the audience today.

In addition to myself, I have with me Mr. Carl Hard who is chairman of our ecological advisory group advising us on the subject of the ecology and environment.

The Corps of Engineers has been involved in activities affecting Long Island Sound and its tributary rivers since the early days of the country. From the early part of the 19th century, for over 100 years, until about 1930, these activities consisted nearly entirely of projects to improve navigation, as a much greater percentage of the interstate commerce of the country in that era was by water.

In the relatively recent past, since 1930, the Corps of Engineers has also undertaken programs of flood control, multipurpose projects providing also water supply and recreation areas, coastal beach erosion control, and hurricane protection.

But in that earlier period before 1930, the sole emphasis of the Federal interest was the enlargement of its waterways to strengthen the Nation's economy and the growth of the Nation from a small agricultural nation to a large industrial nation.

In this period, many of our harbors were dredged as the cities grew and became industrialized. In those days of laissez-faire there were few if any laws passed to restrict industrial activities, and much of our present problem stems from practices established during that all-out drive to build up our industries.

It was not until 1899 that any Federal law was passed to impose any controls on the use of our waterways, and even that act of March 3, 1899 is a river and harbor act, authorizing many navigation projects, and at the same time including two sections of the act aimed at controlling waterfront activities. These two sections of the 1899 act are as follows:

Section 10, which says that creation of any obstruction to the navigable capacity of the waters of the United States is prohibited, and that any dredging or construction within the navigable waterways of the United States would require a permit by the Secretary of the Army.

Section 13, which says it shall not be lawful to discharge or deposit any refuse, except that flowing from streets and sewers in a liquid state, into any navigable waterway of the United States or into a tributary from which the refuse is washed into the navigable waterway, with the proviso that the Secretary of the Army, when anchorage and navigation will not be injured by such deposit, may upon application issue a permit for such discharge or deposit.

This section 13 which I have just paraphrased is the so-called "Refuse Act of 1899" which is much in the news nowadays. You will notice that the Refuse Act specifically exempts sewage and refuse flowing from the streets in a liquid form and bases the authority for the Secretary of the Army to issue permits for discharge or deposit into the waterways when anchorage and navigation would not be injured thereby.

It is apparent that this act of 1899 could hardly be called an environmental act as it excluded sewage. It was part of a navigation act to protect navigation.

It should also be realized that by far the greatest number of the discharges and deposits which we are concerned with now and which pollute Long Island Sound do not, in fact, seriously affect navigation. Therefore, under the wording of the 1899 act, if the industries and others who were discharging were to have applied for permits, the Secretary of the Army would have been in a difficult position to deny such requests.

This has now all been radically changed within the last few years based on a number of recent laws and court rulings broadening the considerations on which the issue or denial of either type of permit would be based -- that is, a permit under section 10 of the 1899 Act, to undertake dredging or construction in navigable waters, and under section 13, to discharge or deposit refuse in navigable waters.

The 1958 Coordination Act, so-called, since amended, requires that the Corps of Engineers coordinate with the United States Fish and Wildlife Service on all permits or other activities affecting the fishery resources of the Nation.

The Clean Waters Act of 1965, as later amended, set up a program for the States to establish water quality standards and programs and schedules for abatement of present non-conforming practices, subject to the approval of the Federal Government. The agency of the Federal Government supervising this program was initially the Federal Water Quality Administration in the Department of the Interior.

In 1970 President Nixon by executive order transferred this function to the Water Quality Office of the newly created Environmental Protection Agency.

Also, last year Congress passed the Water Quality Improvement Act of 1970 prohibiting any Federal licensing agency from issuing a permit for any activity involving a discharge into a waterway of the United States unless that applicant has secured a certification from the respective State that there is reasonable assurance the proposed activity will not violate applicable water quality standards. This act gives the States the first say. And if they say no, the Federal Government will not even take up the permit request.

And finally there is the National Environmental Policy Act of 1969 which requires that all Federal agencies shall to the fullest extent under their authorities minimize or eliminate damage to the environment.

This recent National Environmental Policy Act presents us with a standard guideline which, if we use it diligently, can help us insure that our coastal developments will provide required facilities but yet minimize or remove the possibility of adverse effects on our coastal resources.

In brief, the National Environmental Policy Act demands that in considering Corps of Engineers' work or any application for dredging or dumping in the coastal zone we give attention to:

1. The impact of the proposed action.

2. The possible adverse effects of the proposal.

3. The relationship between short-term use of a resource and long-term productivity from this resource as affected by the proposed action.

4. The possibility or availability of alternatives to the action.

5. Any irretrievable or irreversible commitment of resources which is involved in the implementation of the

proposal.

The law further reinforces the generally accepted principle that views and decisions regarding coastal works will be coordinated with State and Federal agencies which have responsibility and expertise in these areas. The majority of coastal works may be of negligible impact when considered separately. It is the impact of the number of these separate applications that may adversely affect the use of the coastal zone.

This approach may seem unduly oppressive to some, especially in areas where it appears to place constraint on activities heretofore not considered to have any basis for objection.

In administering the Environmental Policy Act, new burdens are placed on all of us. Before we can assume these responsibilities we must formulate and crystallize the policies regarding resources and areas which were formerly given little or no credence as being potentially useful or problematic.

Our existing regulations provide that in cases where there could be an environmental change by the granting of a permit in its initially received form, the impact on the environment will be carefully evaluated. Objections will be presented to the applicant who will be given the opportunity to explain, withdraw, or modify his application so as to remove the cause for the objection.

If this can't be done and it is deemed that granting the permit would lead to significant environmental degradation, the Corps will prepare the statement required by section 102(2)(c) of the Environmental Policy Act of 1969. We may require the applicant to furnish the information required for preparation of the statement in addition to any information the applicant may wish to volunteer in order to demonstrate that granting of the permit is in the public interest. The statement would eventually be filed with the Council on Environmental Quality.

Properly administered, we feel that the act will help eliminate piecemeal planning and development which has resulted in the rapidly deteriorating coastal zone of the past.

Public notices now concerning applications for permits carry the following language:

"The decision as to whether a permit will be issued will be based on an evaluation of the impact of the proposed work on the public interest. Factors affecting the public interest include, but are not limited to, navigation, fish and wildlife, water quality, economics, conservation, aesthetics, recreation, water supply, flood damage prevention, ecosystems, and, in general, the needs and welfare of the people."

This language covers practically every conceivable factor that can affect the public interest. Not all the factors are environmental. A court test of a permit decision on these factors other than navigation, the so-called Zabel case, in Florida, has recently been upheld by the Supreme Court.

The Corps of Engineers is now entering into a joint effort with the Environmental Protection Agency on issuing discharge permits under the Refuse Act of 1899. Where a permit is denied, the applicant must cease such discharge until the discharge is so modified as to qualify for a permit or face prosecution under the Refuse Act. This is a massive undertaking because of the backlog of such discharges.

A "Memorandum of Understanding" between the Secretary of the Army and the Administrator of the Environmental Protection Agency states that the Corps of Engineers will make the decision to issue or deny a permit on those cases affecting the navigable capacity of the waterway, and the Environmental Protection Agency will make the final decision on those cases that affect the water quality.

Several joint meetings have been held by the Federal agencies involved in this program -- the Corps of Engineers, the Environmental Protection Agency, and the Department of Justice -- and by the Federal agencies with each State.

Actually, the States are the dominant government level in the effort to abate water pollution and have been involved in it longer than has the Federal Government. The States have established their water quality standards and their abatement programs.

The Federal Government is attempting to assist the States in these efforts, partly through a program of Federal grants to share in the costs of treatment works, partly in review and approval of the States' abatement programs, and partly through activating a Federal discharge permit program which would provide for Federal prosecution of those dischargers not entering into a satisfactory abatement program.

We hope to be in full swing on this latter program of issuing discharge permits this month, as President Nixon has set a target date of July 1, 1971 for all dischargers to have applied for permits. We have been pressed by industry to let them start applying so that they will not be in default.

It is obvious that final decisions will not be reached on most of these cases by that date, in view of the numbers involved. It is estimated that there are on the order of 800 such discharges in Connecticut alone, either directly into Long Island Sound or into the rivers flowing into the sound.

It should be noted that, in addition to large numbers of requests the Corps of Engineers receives and will receive for permits to construct or discharge into navigable waters, the Corps of Engineers also is requested periodically to undertake studies of the various harbors and rivers to determine if their navigable capacity should be increased. This applies to the large commercial harbors to enable larger and more economical tankers and cargo carriers to be used, and also to the small pleasure boat harbors to serve the ever increasing numbers of pleasure boats cruising in Long Island Sound and its many small harbors and tributary rivers.

Waterborne commerce in the Connecticut harbors and rivers totals 27,069,091 tons a year, having a significant effect on the economy of the region. It is estimated that over 70,000 pleasure boats are based in the small harbors and rivers on both shores of Long Island Sound and up to 200,000 if you include the New York metropolitan waters.

At present the Corps of Engineers has been requested to study the feasibility of deepening New London Harbor and New Haven Harbor on the Connecticut shore. The practice in the past has been either to pump such dredgings ashore for land development, another economic factor, or to dump such dredgings in certain established dumping grounds in Long Island Sound.

Both of these methods of disposal of dredged materials are now open to question -- land disposal because of present desire to preserve marshes and wetlands and the scarcity of areas available for disposal of dredged materials in the vicinity of our towns and cities; and dumping in Long Island Sound in view of present questioning whether such dumping is degrading the ecology of the sound.

Some of the dredgings, particularly in the harbors within our metropolitan regions, undoubtedly contain pollutants. Others, primarily in the small harbors away from heavy concentrations of population, comprise dredging of the natural sediment deposits from streams and coastal erosion, with little pollutant material.

In this regard, there is the problem also of maintaining or redredging the navigation channels or anchorages already dredged.

The first annual report of the Council on Environmental Quality contains the astounding statistic that the sediment deposits in waterways due to natural erosion amount to 700 times the volume of all industrial and sewage discharges. This is presumably a national average and may reflect areas of greater erosion perhaps in southeastern or central United States, but, even adjusted for these factors, the volumes of deposit or filling of Long Island Sound appear to be principally from natural erosion carried down by the rivers or by wavewash along the coast.

This statistic may also give a perspective on the volumetric degree of polluted materials to natural deposits. It would appear that pollutants are a minor fraction of dredging volumes. This fraction, however, may, of course, be the determining factor.

Although these large volumes are not of themselves perhaps polluting, they do indicate that continued use of the harbors and tributary rivers for navigation will require periodic redredging. If these harbors and rivers are not dredged, they will gradually shoal by these large volumes of sedimentation and become unsuitable for the present commercial or pleasure boat navigation.

The question arises as to whether there is any alternative means of maintaining or enlarging navigation use of the harbors or rivers bordering Long Island Sound, perhaps at an added cost that can be justified at whatever added cost for the benefits to be derived, or whether society is willing to forego and give up the benefits of past harbor and river development and revert to a more natural and less developed use of the region's waterways, at the economic cost entailed for such reduced use of the waterways.

The decisions and the trends in future use or non-use of Long Island Sound and its adjoining harbors and rivers will be dictated by the voice of the public. In making such decisions, there should be full understanding of the tradeoffs involved: How much use of the waterway do you want? How much are you willing to give up to preserve or restore Long Island Sound and its tributaries to its condition before the colonization and industrialization of America?

The Corps of Engineers without reservation endorses the effort to remove sources of pollution through State and Environmental Protection Agency time-phased abatement programs, and prosecution under the Refuse Act of 1899 or otherwise of those non-conforming entities not entering into or keeping up with such programs.

Accomplishment of this program should remove much of the concern about dumping of dredged materials into Long Island Sound, once the pollutant discharges are eliminated.

The Corps questions that there should be proposals for immediate suspension of all dredging and dumping, regardless, as possible over-reaction without regard to a more controlled or balanced approach to the problem.

The Corps supports regulation of dredging and dumping of dredged material.

At this time I do request an additional 5 minutes for Mr. Hard who accompanied me to discuss studies that our office is making on the single subject of dredging and dumping. Then I will remain here for the inquisition to follow.

STATEMENT OF
CARL HARD
CHAIRMAN, ECOLOGICAL ADVISORY GROUP
NEW ENGLAND DIVISION, U. S. CORPS OF ENGINEERS

MR. HARD: I am Carl Hard, Chairman of the Ecological Advisory Group of the New England Division of the Corps of Engineers.

Our Ecological Advisory Group was established in May 1970, following Earth Day, to provide scientific assistance to engineers of the New England Division in satisfying the requirements of the National Environmental Policy Act of 1969.

It initiated the development of a system for storage and retrieval of ecological data involving offline storage disks which ultimately should constitute a standard basic reference of biological, chemical, and physical data. The bank currently is structured and ready to receive data on a routine basis now that EPA guidelines and division of work have been clarified.

The Foundation and Materials Branch of the New England Division currently is sampling all materials in situ during pre-dredging investigations and is testing the materials for various chemical and physical characteristics which comprise a preliminary screening study of the materials. Our field personnel are accompanied, where appropriate, by an EPA microbiologist at present, soon to be expanded by the addition of an EPA oceanographer and chemist.

Results of these tests are supplemented by additional tests in the EPA laboratory when it is felt by them that more information would be desirable.

Field efforts will be recycled for more detailed studies if required by EPA.

The need for this extensive sampling and testing program was anticipated by the New England Division last summer at which time the collection of physical, chemical, and biological data on all Corps dredging projects became a routine procedure. We had to rely on the capabilities of such people as the University of Connecticut and Maine Sea and Shore Fisheries Marine Laboratories, and private chemical laboratories.

Currently we are developing our own capabilities in the chemical and sampling areas and are staffed by biologists in our Environmental Resources Section. We have bottom coring capability in up to 300 feet of water depth, using the tugboat MANAMET, and near-shore small boat coring capability in the order of 100 feet water depth. Sampling teams are being trained on a rotational basis. We soon will provide greater leadtime on the environmental aspects of our projects by sampling and testing during our project condition surveys.

The New England Division also anticipated the recent action of Congress which authorized the Chief of Engineers to conduct broad research on the effects of ocean dumping on the marine environment by submitting last year to the Chief of Engineers a proposal for an in-house conducted offshore regulatory program which would monitor five major New England dumping grounds, respectively off New Haven, New London, Newport, Boston, and Portland, for a five-year initial program.

All biological, chemical, and physical oceanographic parameters would be measured for a one-to-two-week period at each site at least twice a year to establish background, and the resulting data would be stored and interpreted using multiple regression analysis in the aforementioned data bank.

Against this background would be satellitic studies, under contract performed by others during important dumping periods.

This proposal is being examined at the Waterways Experiment Station in Vicksburg, Mississippi, along with other approaches to the general problem of ocean disposal. The New England Division is coordinating its effort with that of biologists at the Coastal Engineering Research Center in Washington.

An offshore disposal conference was held at the Marine Biological Laboratory in Woods Hole on February 23, cosponsored by Woods Hole Oceanographic Institution and the New England Division, where 22 oceanographers broke up into discussion groups and each group spokesman reported on various aspects of the problem. The general tenor was not so much whether to dispose at sea at all, but where, how, and when to dispose of what.

Conference notes currently are being assembled and edited and will be used as a basis for future conferences involving people in the present meeting.

MR. STEIN: Thank you. Are there any comments or questions?

Let me ask one for clarification.

MR. KLASHMAN: I have one.

MR. STEIN: You gave up your chance. (Laughter)

At New Haven and New London you have dumping grounds. Both of those dumping grounds presumably are in Long Island Sound, aren't they?

MR. FOGARTY: Correct.

MR. STEIN: What do you permit to be dumped there? Just dredging? Or other material?

MR. FOGARTY: Just dredging. And we do not have any permits for industrial dumping as such except one, and that does actually result in New London, but all the rest of the sound as far as the New England Division is concerned is just for dredgings.

MR. STEIN: What do you permit to be put in the dumping ground off New London?

MR. FOGARTY: That is a product from the Pfizer Company and is an inert waste product after the manufacture of the chemical.

MR. KLASHMAN: Mr. Fogarty, is that a continuing type of permit or are we being asked for --

MR. FOGARTY: That is a continuing type of permit, and we are now in the program of making further analysis of it to verify that it is, in fact, inert.

MR. KLASHMAN: Well, we would like to ask you the next time there is any dump or the permit is being used that we-- We would like to discuss it with you.

MR. FOGARTY: We would be very happy to do so.

MR. KLASHMAN: Mr. Hard, in your statement were you referring merely to dredging?

MR. HARD: Yes, sir.

MR. KLASHMAN: Because you talk in your statement about this meeting you attended where the question came up about not whether to dispose of wastes but where, how, and what to dispose of. This is on page 3 of your statement. But you were just making a general --

MR. HARD: Yes, sir.

MR. KLASHMAN: That is a general statement that has nothing to do with Long Island Sound I take it except in this one case?

MR. HARD: Well, the meeting did not go into specifics to that extent. I mean this was a general discussion of the kind of things which would be acceptable to the environment.

All of these oceanographers at this meeting consistently-- I can't say they all said it because they didn't all speak, but they all reported, and there was no dissension, to the effect that you can dump, you can dump in Long Island Sound, in parts of Long Island Sound, and you would dump different kinds of materials under different conditions.

MR. KLASHMAN: You mean you could dump some industrial wastes, for example, and not cause any water quality problems?

MR. HARD: Well, we were talking about conventional dredging I believe. You're talking about specifically putting potential poisons in the water?

MR. KLASHMAN: As I understand it, then, there is only one area where you are dumping, and we will be in touch with you or you will be in touch with us about this?

MR. FOGARTY: Yes.

MR. STEIN: Are there any other comments or questions?

MR. GLENN: Just one more comment in case Mr. Wuestefeld of the New York Corps didn't pass the word on to the Boston office.

In each of these cases I try to take the time to urge you to please use the 1899 Act also for something it was intended for, and that is to clean up some of this debris. I think you could do it. I think you could get another Supreme Court interpretation maybe that the deteriorating piers and the abandoned barges that are coming to pieces are a form of discharge.

I would like to see you push with the 1899 act on some of that and we wouldn't have as much floating material around in the water.

MR. FOGARTY: May I comment on that, sir? The Corps of Engineers has been making studies of various harbors, the larger harbors which do have a serious problem on debris floating from piers or old barges coming apart along the shore. We have been making reports through the Washington level to go back to Congress on this subject.

My latest understanding is that at higher level than ours they have taken the position that these problems of the deterioration of the waterfront are primarily -- and I'm probably not using the right word here -- of State and local concern.

MR. GLENN: Well, this is quite interesting since the cleanup of the debris after it floats is yours, and the only thing I was trying to do was to get an appropriation which has been pending maybe passed sooner.

Because I feel if you would take action against enough industries and enough municipalities that have piers deteriorating we will suddenly get the appropriation passed.

MR. FOGARTY: Well, our recommendations I should point out were for undertaking such a program. We are not averse to work. And we're ready to undertake such a program.

MR. GLENN: I'm interested to hear this new interpretation --

MR. FOGARTY: So am I.

MR. GLENN: -- on barges and piers, that they are not under your jurisdiction.

MR. KLASHMAN: Mr. Fogarty, --

MR. STEIN: He didn't say that.

MR. GLENN: I thought that's what he said.

MR. STEIN: No. I didn't hear that if he said it.

MR. FOGARTY: Let me restate it, and perhaps I did not say it in a crystal clear way. But what we were advised at the Washington level was that in review by the Office of Management and Budget of proposals for additional Corps projects to clean up waterfronts of sources of debris it was ruled that those were areas primarily of State and local concern.

MR. GLENN: If this debris is going in the water and has a chance to interfere with navigation, you have no responsibility on this?

MR. FOGARTY: We certainly have a responsibility to protect navigation, and that was, of course, one of the primary reasons, as well as pollution or aesthetic reasons, just the protection of small and large boats from the floating debris from deterioration. And if we now have what is an actual, observable menace to navigation coming down the channel, we do have authority to hurry up and pick it up.

MR. KLASHMAN: Mr. Fogarty, could you get a copy of the report and look at the Figure 4 following page 17. On this figure, Mr. Fogarty, you will note that there are 19 areas --

MR. FOGARTY: Is this the map showing these areas?

MR. KLASHMAN: Yes.

MR. FOGARTY: Yes.

MR. KLASHMAN: -- there are 19 areas where there is dredging, the dumping of dredged materials going on now.

By the way, where is the industrial waste dumped? Is that one of these?

MR. FOGARTY: It's off of New London.

MR. KLASHMAN: Is it the one shown there?

MR. FOGARTY: I'm not sure. I can't tell you right now.

MR. KLASHMAN: But of these 19 where you are now dumping dredged materials, I understand that this is a continuing operation that you anticipate is going to continue in order for you to keep the harbors open?

MR. FOGARTY: Yes. The New England Division-- I'm talking about the Connecticut shore which I'm more familiar with than New York. Based on recent years, the average has been about a million yards a year dredged and dumped or placed ashore. Of that, half has been redredging or maintenance dredging to keep the harbors open. Half has been an average of a fluctuating volume of irregular deepening projects to enlarge the harbors.

MR. KLASHMAN: What are the alternatives to dumping in Long Island Sound? Has this been considered by the Corps? I mean either dumping some place on shore or --

MR. FOGARTY: I attempted to mention that in here, but not, of course, in great detail, that the availability of shore areas is getting very, very limited.

First of all, there is no desire to place in wetlands or marshes. And, secondly, in the harbor areas there is generally little open land available that could be used for placing this material. So we have a real knotty problem.

MR. CURRY: There is somebody in the audience who might add a fact to this discussion. Would you like to bring it up?

MR. ROBERT H. WUESTEFELD: With regard to the Pfizer Company.

MR. STEIN: If you are going to add a fact, why don't you come up so we can hear it?

MR. FOGARTY: This is Mr. Wuestefeld, Assistant Chief of Operations, New York office.

STATEMENT OF
ROBERT H. WUESTEFELD
ASSISTANT CHIEF, OPERATIONS DIVISION
NEW YORK DISTRICT, U. S. CORPS OF ENGINEERS

MR. WUESTEFELD: In view of Mr. Klashman's question about the disposal of the Pfizer chemical material, I would say we issue the permit on a quarterly basis for the disposal of that material in the position of supervisor of New York Harbor.

The material is disposed of not in any one of the 19 disposal areas, but it is dumped in The Race in the vicinity of Little Gull Island. It's in The Race that it goes. And the fermentation liquor waste is from the manufacturing process. It has not been found harmful in any way at all.

MR. KLASHMAN: I still would like-- I do not recall -- I may be wrong -- but I do not recall having that submitted to us for comment. We would like very much to have that submitted.

MR. WUESTEFELD: It could be submitted. The thing is it was started long before we were coordinating with you.

MR. KLASHMAN: I understand. But if you could before the next dump discuss this with the office --

MR. WUESTEFELD: It's being done practically daily, so I mean it's a case of we will have to arrange with you then to --

MR. STEIN: These fermentation wastes are organic, aren't they?

MR. WUESTEFELD: Yes. That's right.

MR. STEIN: This is something I didn't understand about the Corps' position. I am glad to have your position here clarified. I would like to go into that.

You think in terms of dumping clean spoil rather than polluted spoil or what you call polluted spoil in the sound. But I didn't know that you were thinking in terms of using Long Island Sound as a place to dispose of industrial wastes even if you considered it inert.

MR. WUESTEFELD: Well, we were not considering it as an industrial waste going into Long Island Sound. It's going into The Race. It's where the greatest turbulence and flow of current is.

MR. STEIN: But you're using the watercourse to put in industrial wastes. Here's the problem that we have. If we're going to come up with a program to clean up the Long Island Sound and we're going to make people spend millions of dollars or hundreds of millions of dollars in the cities to do it, to provide all this kind of treatment, and then we are going to use this as a dump for industrial waste, I think we may have a problem.

I'm not sure. If you think it's all right --

MR. WUESTEFELD: Well, we have clarified it with the State health agencies. It was found to be innocuous. However, at Mr. Klashman's request, I will be very glad to discuss it with him.

MR. STEIN: The question is whether anything is innocuous here -- putting in organic material, pulling it out to Long Island Sound, and dumping it. Suppose I put cardboard in that. Is this a proper use of the sound?

Go ahead, Mr. Klashman.

MR. KLASHMAN: Mr. Wuestefeld, where is the Pfizer Company? Which plant is this it comes from? Or is it from a variety?

MR. WUESTEFELD: It comes from one plant. Offhand I don't recall which.

MR. KLASHMAN: In Connecticut?

MR. WUESTEFELD: In Groton. It is in Groton.

MR. GREGG: A question on the dredging. What information do you have that indicates the amount of increased demand for spoil disposal areas that there may be over the next 10 to 25 years? In other words, are there likely to be major requirements for deepening shipping channels to accommodate new kinds of tankers? Are we looking to a very substantial increase in the future or are we likely to continue at roughly the existing volume?

MR. WUESTEFELD: I believe I had better defer to Mr. Fogarty on that. We do issue the permits for disposal of the material in those 19 areas. The material that is disposed of basically comes from Connecticut, and it is dredged under permits issued by the New England Division. All we do is issue the permit for the disposal of the material.

MR. GREGG: What is the future outlook?

MR. WUESTEFELD: I think Mr. Fogarty could better answer that.

MR. FOGARTY: I have mentioned I believe in my talk that we now have studies that have been requested by New Haven and New London for proposals to deepen those two waterways, and they amount to a fairly sizable volume of material.

We do not have any request at present for any studies for enlargement of any of the smaller harbors.

Our budget submission two years ago -- our budgets are prepared about two years ahead -- for dredging for the upcoming fiscal year 1972 does incorporate appropriations, if passed, for five harbors along the Connecticut shore. I think that these are germane to this discussion today.

Presuming that these appropriations pass, they would be programmed for dredging in the coming fiscal year.

These five harbors are Stamford Harbor, New Haven Harbor, Patsall River which is a small river in Westbrook, Connecticut, Clinton Harbor, and the Housatonic River.

MR. GREGG: You don't see any changes in the commercial navigation situation in the sound over the next decade or so that would require a deepening of the major commercial navigation channels and harbors?

MR. FOGARTY: I mentioned, Mr. Gregg, we do have the studies of those two, and that is for the purpose of the increased commercial activity. We do not now know of any possible other request, no.

MR. STEIN: Are there any other questions?

Let me raise two questions with you, and I think they are both very important ones.

One is the problem we have had with disposal of dredged spoils in other bodies of water. Let me specifically mention Lake Erie and Lake Michigan. The Corps has come up with a program there where they have determined that at least dredged spoils which were determined to be polluted-- And, by the way, with the conditions of the cities and the rivers discharging wastes into the harbors -- I don't know -- maybe you can find a clean spoil when they dig out these harbors and maybe not. That's a factual question. But at least when the spoil was polluted they were not going to dump it in the water but find a place of land disposal for it.

However, we did leave the question open. As I understood the Corps' position, it was largely a financial question of whether they were going to use Lake Erie or Lake Michigan to dispose of any spoil, and we left that question open.

But as I understood your statement here today, Mr. Fogarty -- and you interposed that at the end of your typed statement -- you said it was the Corps' position to utilize the waters of Long Island Sound for the disposal of unpolluted dredged spoil. Did I understand you correctly to say that?

MR. FOGARTY: Well, more or less words to that effect, yes.

MR. STEIN: All right. Well, again I think we come up with the question, Mr. Fogarty, and maybe this is what we are going to have: If we are going to keep stormwater and all these municipal and industrial wastes out, are we really cleaning up Long Island Sound to make it available for a selective dump? Maybe we are. But I think we have to look at that question.

The other question I have -- and this bothers me -- is I know in the Corps -- and I have worked with the Corps as some of you may know very closely for many years; as a matter of fact, we go before the same committees of Congress --

but I know we all have the same idea in the Federal Government and that is the even-handed administration of the law. Now, if the Pfizer Company can get a permit for putting out what you consider a nondeleterious waste and get a permit to dump it in the waters of Long Island Sound, then I suppose if we have that precedent we have to entertain the permits of every company that comes along that says they have a non-deleterious waste and a possible place to dispose of it would be to dump it in Long Island Sound.

MR. FOGARTY: May I differ with you, Mr. Stein, in that that Pfizer permit I think Mr. Wuestefeld implied was an historical you might say hangover from before.

MR. STEIN: In other words, they're discharging on a grandfather clause?

MR. FOGARTY: No, sir. But let me get into this a bit. I talked about the fact that we now have these further acts. And any action now on permits considers all of these recent additional Federal acts. And what I'm saying is that it does not follow that other permits will be granted, no, sir.

MR. STEIN: How about the Pfizer permit?

MR. FOGARTY: That is --

MR. STEIN: They may be innocent bystanders, but I'm obliged to go back and look at that again now to see if we are going to recommend renewal of that permit.

MR. FOGARTY: That is what we are studying ourselves. We are having an analysis made of that, and we are going to review and determine whether to close out Pfizer.

MR. STEIN: All right. Thank you. I think that clarifies the situation.

Are there any other comments or questions?

(No response.)

If not, we will stand recessed for lunch until 2:00 p.m.

(Whereupon, at 12:47 p.m., the conference was recessed, to be reconvened at 2:00 p.m., this date.)

AFTERNOON SESSION

2:30 p.m.

MR. STEIN: Mr. Klashman.

MR. KLASHMAN: I would now like to call on Mr. Gerald Rogers, Special Assistant for Environmental Engineering, Northern Division, Naval Facilities Engineering Command, Philadelphia.

Mr. Rogers.

STATEMENT OF

GERALD ROGERS

SPECIAL ASSISTANT FOR ENVIRONMENTAL ENGINEERING

NORTHERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND

MR. ROGERS: Mr. Chairman, the Navy, recognizing the need to treat raw sewage from the ships, in 1968 installed a sewage treatment device in the destroyer USS FISKE (DD-842) for shipboard evaluation. The device, which utilizes an electrochemical separation process, incinerates the solids and chlorinates the fluids. This device worked well, and the effluent met the Public Health Service water quality standards of 1965.

The first large ship installation, which consisted of 12 of the 175-man units, was installed in the submarine tender USS CANOPUS (AS-34) in May 1970. From the beginning the system has been plagued with reliability and maintainability problems.

The contractor, Fairbanks-Morse Company, Beloit, Wisconsin, has incorporated 14 major changes into an improved version, a 500-man unit. The prototype has been undergoing simulated shipboard tests at the factory since early November 1970 without any failures and providing an effluent which will meet the initial standards expected to be imposed by the Federal Water Quality Administration. The Navy has contracted to install three of these 500-man units in the USS FULTON (AS-11) (the submarine tender berthed at State Pier in New London, Connecticut) during her overhaul scheduled to commence at Charleston, South Carolina this April.

In addition to the onboard treatment devices, FULTON will also be re-piped so that all soil and waste drains can be discharged into the municipal sewage mains which are being extended onto State Pier. This system will provide us a backup (should the onboard devices prove unreliable) and afford us the opportunity to transfer our repair shop liquid wastes (pretreated if necessary) and galley/scullery liquid wastes ashore.

It should be pointed out that although current legislation does not prevent these discharges (except sewage), the Navy has decided to use the FULTON as a "test bed" to insure that all shipboard polluting liquid wastes can be eliminated.

The FULTON will also be equipped to receive for further transfer ashore the liquid wastes from submarines moored alongside.

In summary, the Navy is very optimistic about the prospects of FULTON providing the opportunity to demonstrate leadership in development of methods to halt liquid waste pollution from ships.

Our long-range plans also include development of second-generation equipment which will meet the second-phase standards expected to become effective in another five years.

Another ongoing effort which will interest you is the solution for handling our submarines' liquid waste problem. This summer we will commence re-piping our submarines so that liquid wastes can be transferred via hoses either to the FULTON, to a municipal sewage main if the pier is so equipped, or to a barge, the first of which will be outfitted shortly by the Boston Naval Shipyard with two biological purification systems.

In addition to our liquid waste cleanup program described herein, we are also conducting extensive studies to determine methods for disposal and handling of shipboard-generated trash and rubbish and oil sludge. We are equally optimistic of our ability to develop equipment such as an oil/water separator, a high temperature nonpolluting incinerator or a rubbish compactor which will enhance retention of rubbish on board.

Thank you.

MR. STEIN: Thank you.

Are there any questions or comments?

MR. GLENN: Just one question. On that oil/water separator, how do you expect to get that removal?

MR. ROGERS: I haven't got an answer for you. I'm sorry. I'm not too familiar with that portion of it.

MR. GLENN: Most oil/water separators will not get down to the required amount, which is as near zero as possible. So I thought I had better indicate that it has changed in recent times where you have to get down to zero, as near zero as possible.

MR. ROGERS: As possible.

MR. GLENN: Most oil separators will only take it down to about 10 or 15.

MR. ROGERS: Most of the places we are working with now do just take the oils and haul them out to the private contractors for removal at this time.

MR. STEIN: You don't put the waste out from the submarines now, do you?

MR. ROGERS: I believe so.

MR. STEIN: You do? Doesn't that give away your position? I thought that the way you did that was weight them and put them in a plastic bag and send them down. No wonder we're losing all those submarines.

MR. CURRY: I thought you saved them until you got back to Connecticut.

MR. STEIN: Yes, they do.

MR. CURRY: Do you or don't you?

MR. ROGERS: Sir, I'm not familiar. I believe that the wastes from the submarines are piped directly overboard.

MR. CURRY: They're piped directly overboard?

MR. ROGERS: If I'm not mistaken. I don't believe --

MR. STEIN: Do you know that?

MR. ROGERS: No, sir. I'm not familiar with the makeup of the submarine.

MR. STEIN: I know. And we may strike this from the record. But as far as I can see, they don't pipe the wastes from the submarines overboard because this gives away the position. As I understand this, they put the wastes in a plastic bag, weight it, and send it down. Of course, the plastic bag doesn't last too long as far as water quality is concerned, but by then the submarine is out of the vicinity.

I would hope the Navy would use at least those precautions. You know, we're very interested in water quality, but we're just as interested in preserving the lives of the boys on the submarines.

MR. CURRY: We don't want Washington to know where they are. (Laughter)

MR. STEIN: No. (Laughter)

It's very hard for him to know that since he has been dead so long. (Laughter)

MR. CURRY: Can you tell me what electrochemical treatment is? How does it work? And is there any enforcement agency that has approved the naval plants?

MR. ROGERS: Basically it's electrolysis of the sea water, and you form chlorophenes, and you have a flotation where the solids are floated on the surface, and they are scraped off, and then they go into an incinerator, and the chlorinated effluent is discharged overboard basically.

MR. CURRY: You're going to do something about your rubbish in the future. What do you do with it now?

MR. ROGERS: Most of the time it is brought on shore and then transferred to private contractors in the area.

MR. STEIN: Any other comments or questions?

(No response.)

Thank you very much.

MR. KLASHMAN: Thank you.

I would like to now call on Mr. Darrell J. Schwalm, United States Public Health Service, Food and Drug Administration.

Mr. Schwalm.

STATEMENT OF
DARRELL J. SCHWALM
REGIONAL SHELLFISH CONSULTANT
SHELLFISH SANITATION BRANCH, FOOD AND DRUG ADMINISTRATION
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

MR. SCHWALM: Mr. Chairman, conferees, my name is Darrell Schwalm. I am a regional shellfish consultant with the Shellfish Sanitation Branch, Food and Drug Administration, Department of Health, Education, and Welfare.

For the sake of brevity, I am going to summarize some of the technical data and some of the background information. I may omit from the written statement that you have there before you. However, I would like the written statement that you have and our program manual of operations which I will present to the chairman included in full in the official minutes.

My statement of interest in this conference is made within the framework of the National Shellfish Sanitation Program (NSSP) -- a consumer protection-oriented program administered jointly by the States and the Public Health

Service, Food and Drug Administration.

The FDA is directly interested in the pollution profiles of Long Island Sound and is vitally interested in seeing that more of the naturally available shellfish-growing waters in the sound meet the criteria for the harvesting of shellfish for human consumption.

In this connection, the Food and Drug Administration is pleased to support any recommendations of the Environmental Protection Agency that will upgrade the water quality in Long Island Sound, and especially those recommendations which, if implemented, will allow the opening of shellfish-growing waters.

The Federal Government has been active in the field of shellfish sanitation since 1925 when an outbreak of typhoid fever attributed to the consumption of oysters taken from polluted waters occurred. The State shellfish control agencies and the shellfish industry at that time requested the Federal Government to aid them in developing a program to assure safe shellfish for the consuming public.

Minimum standards were developed for adoption by all shellfish producing States, and since that date the standards have been revised and updated several times.

The current edition of the National Shellfish Sanitation Program Manual of Operations, dated 1965, has three parts. Part I of the manual provides detailed criteria for surveying and classifying shellfish waters. For example, surveys of shellfish growing areas must take into consideration the most unfavorable hydrographic and pollution conditions that may exist in the areas surveyed. The States of Connecticut and New York have agreed to classify their shellfish waters according to this manual.

TECHNICAL CONSIDERATIONS:

Shellfish have received this special attention because oysters, clams, and mussels have an unusual potential for the transmission of disease to man. This unusual potential can be attributed to three factors:

1. The environmental growth tolerances of shellfish are such that they ordinarily grow only in estuaries in which there is an admixture of fresh and salt water. These are also areas most subject to pollution from both industrial and municipal sources.

2. Shellfish are filter feeders. In the process of feeding they pump large quantities of water across their gill systems. Particulate materials and dissolved substances are removed and concentrated to levels above that of the overlying waters. Quahogs during periods of active feeding concentrate bacteria to a level 2.5 to 6.0 times that of the overlying waters. The concentration factor for metals,

industrial wastes, or pesticides is much greater.

3. Shellfish are frequently consumed raw or with little cooking. The entire animal is eaten.

It has been demonstrated many times that these factors can combine to transmit human diseases. Typhoid fever has been historically linked with polluted shellfish, but in recent years infectious hepatitis has been the prime offender.

There have been no recognized instances in the United States in which shellfish have carried a significant burden of industrial wastes to cause acute illness. However, in Japan 83 cases of severe mercury poisoning were attributed to waste discharged from a plastics manufacturing company. Carcinogens, various heavy metals, and pesticides have also been identified in shellfish.

Use of shellfish as food then demands that great care be exercised to assure that harvest areas are reasonably free of undesirable pollutants. By similar reasoning, great care must be exercised to prevent the harvesting of shellfish for direct marketing from any areas which are not of satisfactory quality. These two elements are, in fact, the underlying principles of the National Shellfish Sanitation Program.

SHELLFISH GROWING AREA CLASSIFICATIONS:

The detailed technical criteria for the classification of shellfish growing waters is set forth in Part I of the National Shellfish Sanitation Program Manual. A copy of the current edition of Part I is provided as part of this statement, and it will be provided to the chairman. In brief, the types of classifications are as follows:

1. Approved -- Shellfish may be taken from these areas for direct marketing.

2. Conditionally Approved -- Shellfish may be taken from these areas for direct marketing only when pre-established performance standards based on the approved area criteria are met by nearby sources of pollution; e.g., a sewage treatment plant, a harbor facility, etc. When the standards are not met, the area is closed to shellfish harvesting.

3. Restricted of moderately polluted -- Shellfish may be taken from these areas only under close supervision by health officials and only for purification in an approved depuration plant or by relaying before they can be released for the market.

4. Prohibited or grossly polluted -- Shellfish may be taken from these areas only for the purpose of transplanting seed stock or relaying mature stock to approved

growing areas under special written permit from health officials.

SHELLFISH AS A NATURAL RESOURCE:

The estuaries and their biological populations have long been recognized as a valuable natural resource. In fact, colonial statutes hopefully designed to assure the wise use of this resource antedate most other conservation measures in the United States. Unfortunately, this concept passed into a period of eclipse -- at least insofar as water quality was concerned -- during the very period in which degradation of estuarine water quality was most prevalent. It now shows signs of reemerging.

The National Shellfish Sanitation Program as established in 1925 had a twofold base: (1) safe use of a resource, and (2) conservation of a resource. This dual concept was reaffirmed by action taken at the 1964 National Shellfish Sanitation Workshop which adopted a positive statement to the effect that the estuaries represented a valuable manageable natural resource -- similar in many respects to forests, land, air, or freshwater -- and that shellfish culture represented a beneficial use of this resource.

It does not, of course, follow that shellfish culture is the only beneficial use, or that it is the most important beneficial use. But clearly, and for several hundred years of our history, shellfish culture has represented a beneficial use of a natural resource -- the estuary and its tributary streams.

POLLUTION IN CONNECTICUT:

There are approximately 43,000 acres of estuarine waters in Connecticut that are presently closed to the direct harvesting of shellfish for the market because of water pollution. This constitutes 46 percent of the available shellfish growing waters. The areas are closed because biological pollution from small sewage treatment plants in several of the coastal towns, upstream pollution flowing out into the sound from the major river systems, individual pollution discharges from homes along the coast, and pollution from summer recreational activities (e.g., boat marinas, summer cottages, etc.) render the shellfish unsuitable for direct human consumption.

The towns affected by these closures include:

1. Greenwich
2. Stamford
3. Darien
4. Norwalk
5. Westport
6. Fairfield

7. Bridgeport
8. Stratford
9. Milford
10. New Haven
11. East Haven
12. Branford
13. Thimbles Islands
14. Madison
15. Clinton
16. Old Saybrook
17. Old Lyme
18. East Lyme
19. Groton
20. New London
21. Stonington

In addition to the 43,000 acres of closed areas, new closures or extensions to present closures are pending in 17 coastal communities in Connecticut because of spreading pollution in the sound.

POLLUTION IN NEW YORK:

A number of areas in New York are closed to the harvesting of shellfish because of water pollution. The largest closed areas are in western Long Island Sound, although a number of smaller closures exist along Long

Island's north shore as one moves further east. Moving in a counterclockwise direction from west to east, the major closed areas are:

1. Westchester County -- This area includes about 15,500 acres of underwater lands. It had been a major shellfish producing area in the past, although it has been closed for over 20 years. It is reported that about 7,500 acres of the inshore waters have extensive populations of hard clams (_Mercenaria mercenaria_). Because of this abundance, the area has been used often as a source of shellfish for transplant programs. For example, the following amounts of shellfish were transplanted during the period 1965-1970:

1965 - 17,490 bushels
1966 - 27,355 "
1967 - 21,810 "
1968 - 7,375 "
1969 - 4,575 "
1970 - 655 "
79,260 " Total

2. Manhasset Bay -- It is reported that some hard clam resources are found in this bay and that a definite potential for future development exists. Only one transplant operation has taken place in recent years. This occurred

in 1967 when 8,823 bushels of hard clams were transplanted from this area. Approximately 2,100 acres are closed in this area.

3. Hempstead Harbor -- Hard clams are found in this area, and transplant operations have occurred recently. During the years 1964, 1965, and 1967, 10,278 bushels of hard clams harvested from the northern portion of the closed area were transplanted. There are approximately 3,300 acres of closed area in this harbor.

In addition:

Approximately 270 acres in Oyster Bay Harbor.

90 acres in Cold Spring Harbor.

20 acres in Huntington Harbor.

40 acres in Mill Pond.

130 acres in Northport Harbor.

1,380 acres in Smith Town Bay.

810 acres in Port Jefferson Harbor.

910 acres in Fishers Island Sound.

110 acres of Dosoris Pond.

In addition, there are some nonproductive areas in Northville off the Northville oil facility and portions of Mattituck Inlet and portions in the offshore area of Inlet Point that are closed.

The present resource level of these sites varies but they must be considered as potentially valuable shellfish producing areas.

SEWAGE TREATMENT CONSIDERATIONS:

Any program of water quality improvement for the purpose of providing additional areas for the direct market harvesting of shellfish must take into consideration the National Shellfish Sanitation Program requirements for either an approved or conditionally approved area. The elimination of a pollution source from an area or to an area is rather easy to evaluate in terms of both water quality improvement and its effect on the classification of a shellfish growing area.

However, when the water quality control is dependent upon the design and operation of a sewage treatment facility discharging into the same area, then the abatement program should be guided at all stages of planning by the National Shellfish Sanitation Program recommendations.

With respect to sewage treatment plants, the Food and Drug Administration has been working with the Environmental Protection Agency on additional measures to protect shellfish resources.

The recent publication of the Water Quality Office, Federal guidelines, "Design, Operation and Maintenance of Wastewater Treatment Facilities," includes requirements aimed at protecting shellfish.

We call your attention to these facts so that they may be given adequate consideration where the water quality improvement program is aimed at the eventual use of the estuarine water as a shellfish harvest area for direct marketing. The abatement program would have to be shown to provide an established degree of treatment at all times during which the related area is to be used for harvesting of a raw food resource.

The fact that the treatment facility may provide better than the established degree of treatment most of the time is all to the good, but for a raw food resource the assured level which will be consistently met at all times during periods of shellfish harvesting is the critical consideration and the one that will determine the location and the amount of any additional harvest area that will be made available in accordance with the National Shellfish Sanitation Program.

It should be made clear that any treatment plant outfall, no matter of what degree of treatment, must have a closed buffer or safety zone around the point of discharge.

CONCLUSION:

In conclusion, municipal, industrial, and other waste discharges to the waters of Long Island Sound have caused areas in both New York and Connecticut to be closed to the harvesting of shellfish. The NSSP is directly responsible for assuring the safety of shellfish harvesting areas. The program is also responsible for the proper classification of any areas which may be reclaimed for shellfishing. The National Shellfish Sanitation Program is vitally interested in seeing that more of these natural shellfish waters meet the criteria for growing and harvesting of shellfish for human consumption.

In this respect, we strongly support any recommendations or actions sponsored by this enforcement conference aimed at upgrading the water quality of Long Island Sound. We especially support any recommendations which might allow the opening of presently closed shellfish growing areas.

Thank you.

(Note: The National Shellfish Sanitation Program Manual referred to by Mr. Schwalm is made an exhibit to the conference proceedings and is on file in the offices of the Environmental Protection Agency.)

MR. STEIN: Thank you, Mr. Schwalm.

Any comments or questions?

MR. PELOQUIN: Have any studies been made to determine the extent of reopened areas as a result of the construction of treatment facilities, if you know?

MR. SCHWALM: This would be treatment facilities?

MR. PELOQUIN: Yes.

MR. SCHWALM: That have gone in a couple of years ago? And what improvements have been made?

MR. PELOQUIN: No, treating raw sources now and upgrading those which are considered to be below par.

MR. SCHWALM: With respect to opening shellfish areas after treatment facilities are in, we have to study this on an individual level, you know. I think throughout Connecticut -- what I'm most familiar with -- the treatment facilities, a lot of them, are in harbors where there will be many sources of pollution, and one treatment facility doesn't eliminate all the sources of pollution.

Does this answer your question?

MR. PELOQUIN: In other words, there have been no comprehensive studies made to determine just how extensive are areas that could be returned to production?

MR. SCHWALM: No, no, in terms of X number of sewage treatment plants installed, X number of acres, no, we have not done any studies of that sort.

MR. PELOQUIN: Thank you.

MR. STEIN: Mr. Gregg.

MR. GREGG: I notice, Darrell, in the preconference report there is a reference to shellfish closures in Connecticut that says there are 15,000 acres in Connecticut closed to shellfish. Your paper says there are 43,000 acres in Connecticut closed. Are these different kinds of closures?

MR. SCHWALM: That is correct.

MR. GREGG: The difference between prohibited and restricted or --

MR. SCHWALM: No, the 15,000 acres referred to active shellfish harvesting areas. Ours include both active and inactive areas. So the 43,000 acres are the total estuarine waters in Connecticut that are closed to shellfish whether or not they are active producing areas.

MR. STEIN: What's that interim grade you have?

MR. SCHWALM: In our classification system?

MR. STEIN: Yes.

MR. SCHWALM: We have the approved. We have the conditionally approved.

MR. STEIN: What do you mean by "conditionally approved"?

MR. SCHWALM: This is an area where usually it's subject to occasional pollution from let us say a sewage treatment plant. If the sewage treatment plant should suddenly stop operating, then you'd have to close the area. Under normal operation it would operate fine.

There is a conditional approval area in Narragansett Bay where every time it rains over three-quarters of an inch they automatically close the area for seven days to allow the combined sewer outfalls and the sewage plant discharges to clear.

MR. STEIN: You mean you're running it that close with an animal that we eat intestinal tract and all?

MR. SCHWALM: The same with depurating shellfish. Studies have shown, and everything, that shellfish will cleanse themselves of biological pollutants if they are in clean water. So if you have a sewage plant that discharges one day, a week later those shellfish are going to be perfectly safe for consumption.

MR. STEIN: In the depuration plant you cover all the factors. But you are ready to relate this to water in the reports of the sewage treatment plant as to when these shellfish are safe to take?

MR. SCHWALM: This is a very good point. Any conditional area must be under very close supervision by the State officials and us in our review of their activities. You're right. We cannot treat a conditional area like we would treat any other area. It has to be constantly sampled. When they want to open it up again, it has to be sampled to show it is in fact safe for operation.

MR. GLENN: What do you mean by "safe"? For viruses too?

MR. SCHWALM: We sample. I think as you know you cannot sample for viruses.

MR. GLENN: That's what worries me.

MR. STEIN: Why can't you sample for viruses?

MR. SCHWALM: I will have to relay that to the laboratory people. As far as I know, we don't have the technical expertise to isolate viruses.

MR. STEIN: We have it.

MR. SCHWALM: Not the hepatitis.

MR. STEIN: It takes a little time. No, we do.

MR. GLENN: I think maybe you're making a better case for depuration than you could make for pasteurizing milk which we have done for quite a while.

MR. SCHWALM: You mean depuration from conditional areas?

MR. GLENN: Or all areas. All shellfish.

MR. SCHWALM: I should point out in Connecticut there are only five conditional areas, and four of those are seasonal -- what we call seasonal. That is, they are closed during the summer when there is a recreational population polluting the waters. They are open in the winter when there is no source of pollution there.

MR. STEIN: You mean in New York they have off-track betting but now in Connecticut in only five areas you're prepared to play Russian roulette?

MR. SCHWALM: Is that a question?

MR. STEIN: Interpret it as you will.

MR. PELOQUIN: Mr. Chairman, I was always under the impression shellfish taken from a conditional area had to be put through depuration before they could be consumed. I wasn't aware --

MR. SCHWALM: They are in essence depurated in the water once the water is clean.

MR. STEIN: They figure that sitting there is the equivalent of depuration. They don't put them through depuration.

MR. SCHWALM: I should point out perhaps, Mr. Chairman, that many studies have been made on this. This is a very important consideration, as you know, as I'm sure you appreciate, and studies have been made on this. If you want some more information on this, we have a person in the audience who is very --

MR. STEIN: I'm familiar with this. I have worked with shellfish programs for years. And the difficulty that I see with it is I'm going to get stuck with it again. (Laughter)

Are there any further questions or comments?

MR. CURRY: Can I ask one?

MR. STEIN: Yes.

MR. CURRY: This is personal, but you're an expert. Why am I not protected in the same way on shellfish to make sure that I am on milk or water or bonded whisky? Why aren't we sure that every shellfish that we buy is completely safe?

MR. SCHWALM: I think the history of our program has shown that any shellfish that are grown and harvested from our approved or conditionally approved areas when they are managed right are safe for human consumption. There aren't any epidemics --

MR. STEIN: That's a big qualification -- "when managed right."

MR. SCHWALM: Well, in Connecticut. Now, I can't speak for the whole country. I'm regional consultant for this region. I can't speak for the whole country. You'd have to get somebody from Washington here to do that.

But the shellfish that are taken from approved areas and conditionally approved areas, there has not been an epidemic associated with them.

MR. STEIN: You mean we have to have an epidemic and not an enteric upset to do that? That's a very interesting observation.

MR. METZLER: Oh, come on. Lay off the witness. He has done a good job. He has defended a program. And we have a good deal more array.

(Audience applause)

And our record isn't very clean in the public water supply business either. We have more outbreaks there than we have in shellfish sanitation.

MR. STEIN: I think you're right, Mr. Metzler. More people drink water than eat shellfish.

I have a story about this. This holiday season brings it to mind. The orthodox Jews can't really eat shellfish because the only fish they can eat are those that have a backbone and scales. And they can't eat at all on the Day of Atonement.

One time when I was growing up and living in Brooklyn, I ran across a guy on that day who was "whomping" a dozen oysters. I was shocked, being rather young at that time, and I said to him, "My goodness, are you eating oysters on Yom Kippur too?"

And he looked at me askance, and he said, "What's the matter? Doesn't it have an "r" in it?" (Laughter)

MR. KLASHMAN: Thank you very much.

Are there any other Federal agencies represented here who wish to make a statement?

(No response.)

If not, that completes the Federal presentation.

MR. STEIN: Thank you.

May we call on Connecticut?

MR. CURRY: Here, or there (indicating rostrum)?

MR. STEIN: Here. Handle the time the way you wish.

STATEMENT OF

JOHN CURRY

DIRECTOR, CONNECTICUT WATER RESOURCES COMMISSION

MR. CURRY: It has been our basic attitude that Connecticut, when it revised its statute in 1967, provided a clean water program that would most closely coordinate with the Federal activities in this field according to what were the then existing Federal laws in the business.

Now, in thinking about how to design a statute to coordinate with the Federal effort, we gave due consideration to the then existing statutes in New York State because we thought that they represented an earlier effort to accomplish a similar working arrangement with the Federal Government.

I think before we start we should note that one of the things about this conference is it is concerned with the boundary waters between two States which by their programs should most admirably accomplish what are the expressed Federal objectives.

Having made that point, I will restrict my comments to Connecticut, because by our previous experience we have had with New York State I think they can make their own points.

In order to make full use of the correlation between these State statutes that we have and the Federal programs, we do, of course, have to meet regularly with our Federal brothers, and we are in close cooperation with the regional office of the Environmental Protection Agency.

Since this is an ongoing relationship, day in and day out, we have no objection to having a conference like this. In fact, it's pleasant to sit down face to face with the people in a rather agreeable environment rather than some of our hard work sessions or long telephone conversations and exchanges.

So although we might question the necessity of a conference such as this, we are still enjoying the opportunity to be here with you.

When we had a meeting in Boston, Mr. Ruckelshaus was there, and I had a discussion with him. Many other people were there, so they all know. He indicated that he was the man who called this conference. So the first question I asked him was why.

And so he indicated that it was in order to help the States with our abatement program, which I appreciated.

Actually, he used a lot more words than that, but I think they were only to emphasize that was the point.

And so, in the words of my nephew, "What I want to tell you, baby, is what I want you to do," you know. (Laughter)

Now, to be as brief as possible in telling the Federal Government how they can help us with what Mr. Ruckelshaus wanted them to do, I might say we might first of all, to save time, just comment on the conclusions of the report rather than go through the long difficulties with the body of the report. This is the report dated March 1971 by the Environmental Protection Agency called "Water Quality of Long Island Sound," which I take to be the basis of this conference.

We understand from what we read about other conferences that this data sometimes comes too late for a review by the State. But we received it in time for review. Our only difficulty is we didn't receive it in time to point out the many errors that we found in it so that they could be corrected before we met.

But if we go along with him, I think, as we indicated previously, we can subsequently straighten out all these rather minute line by line details that we are talking about.

If we go back to talking about the conclusions, it would be silly in this day and age anyway not to agree with Conclusion 1 or actually to agree with Conclusion 2, except that it may have been a point that Connecticut does have a statute for the control of dredging and fill in the tidal marshes, and it does include heated discharges which affect any use of the waters, and it defines them in the statute as pollution, and we can take action against them.

We have no objection. You just missed the point, which I thought might be of interest to the people in the audience.

We might also agree with the point that is attempted in Conclusion 3 except that we recognize that there were in the last 50 years many other factors other than pollution which may have affected the profits and losses of the oyster industry.

In fact, I remember one time I think Victor Loosanoff, who was a well known expert in the field, was on the stand in a court case, and the judge asked him if there were any other ways that oysters could die beside pollution. And when he got to No. 29, the judge said, "That's enough."

So there are many other things that affect the oyster industry than pollution. And we're not saying that pollution isn't a factor, and we agree to it. But to use it to make an important point at a conference like this is-- We agree with that, but sometimes it's a dangerous tactic not to be thoroughly scientific.

Now, in respect to Conclusion 4, we believe that we are talking about certain water quality criteria which are a subject of a report by a Federal agency and which made certain suggestions and recommendations for quantifying criteria which had already been submitted with our proposed water quality standards to the Federal Government.

Rightly or wrongly, we have been educated through the rules and regulations and interpretations of the Federal pollution abatement agencies to consider the water quality standards as being this kind of criteria we're talking about, and, in addition, but of equal importance, the implementation schedules to accomplish these criteria and a system of monitoring to prove that we were accomplishing them.

Now, with that, we do not understand at this date or at this meeting how these criteria can be considered the water quality standards, which were much more than the criteria.

We presume that, in saying that many of the implementation schedules are not being met, the report does not take into account the necessary revisions in these schedules which have been made as required to accomplish maximum pollution abatement and to be in conformance with the Connecticut statute under which the original implementation plan was developed and sent to the Federal Government.

If it recognizes one part of our statute, it must recognize the second part which is tied to it.

We have no reason to disagree with Conclusion 5 except we would note that the bacterial pollution noted at locations such as in Greenwich Harbor, say, only occurred during the nonrecreational seasons when chlorination was not provided.

With respect to Conclusion 6, I think it is an important point in this conference to note that the main body of Long Island Sound has not evidenced signs of oxygen deficiency. I am essentially quoting the report. However, the wording might indicate that the deficiency can be assumed in the future.

If the assessment of the present situation is correct and due account is made of the ongoing construction programs for pollution abatement, it might not be proper to promote such a conclusion from the present data. I'm just bringing up the question.

If No. 7 is a matter of fact, then, of course, we have no argument against using it as a conclusion.

In regard to Conclusion 8, Connecticut has given serious consideration, most recently within the activities of the Environmental Task Force and the present considerations of the State Legislature, to providing more specific controls on boat pollution than are provided by our general pollution statute. Our current difficulty is in anticipation of what the rules and regulations on these matters will be when they are promulgated as required by Federal legislation.

I think personally when this matter is determined you will find that Connecticut will be happy and willing to provide coordinating legislation or policy and program to make such rules and regulations of the Federal Government have a maximum effectiveness within the State.

Conclusion 9 covers one of our most important considerations in pollution abatement in Long Island Sound. We have noted previously in our meetings with the Federal Government that the contingency plan for water pollution developed under the Federal law allows various interpretations of the relationship between the Federal and State agencies from State to State or from part of State to part of State, and we have suggested that although the efforts on both sides have produced notable results in the last couple of years -- and that is a fact -- a more careful definition could proceed another step toward the elimination of this problem. And it is a most important problem. This is oil pollution discharges into the sound.

We do agree, and we have recommended against the disposal of polluted material as suggested in Conclusion 10 into these disposal areas that we had under discussion previously. However, we think it might be reasonable to retain a few dumping areas available for, say, private citizens doing small dredging jobs in unpolluted materials. We think that is a proper thing to do for the citizens in the State to save an unnecessary expenditure of funds.

In commenting on Conclusion 11, it is necessary to note the obvious deficiency in this report by the exclusion of the interstate problem between Rhode Island and Connecticut, through the procedure of placing boundary lines for this conference. What I'm talking about is placing the boundary line not in the center of Pawcatuck River between Connecticut and Rhode Island but placing it on the Connecticut side.

This would be all right except in the tables listing the sources of discharge there was a mistake made and the report includes five that actually go to the Pawcatuck River, which gives you boundary lines outside the interest of this agency. If you want to include the Pawcatuck River, you have got to include six more that you missed.

What has happened here is I think you have exposed your own hand. You're like the fellow who was married for 30 years, and his wife didn't know he drank -- until one night he came home sober. (Laughter)

Just so we will be all in on the game, we do want to point out that on the Pawcatuck River we have secondary activated sludge treatment plants proposed for treatment, and our sister State of Rhode Island has primary suggested for the town of Westerly.

This is an inadequacy in our dealings with the Federal Government on interstate matters. But it is outside the conference area, so we won't say any more about it.

MR. STEIN: Do you want to move for Rhode Island to be included in this?

MR. CURRY: No. They are very talkative people, and the conference would be much longer. (Laughter)

Of course, we don't have any objection to Conclusion 12, and we are always glad to have the Federal Government support our abatement actions in waterways that are of specific interest to the State.

So now we can pass on to the recommendations.

We, of course, assume that the enforcement actions suggested in Recommendation 1 would be on those matters which we have already referred to the Attorney General's office for action.

As stated previously, we feel that water quality include the implementation plans. It is inherent that if the schedules in such implementation plans are arranged to bring about the completion of projects in the shortest period of time -- if you do this -- then they must have a flexibility to allow for changes which develop, which occur, or are necessary in the development of the project when these changes are shown to be required for good and sufficient reasons.

We realize that the Federal Government has no mechanism set up in the Federal operation to provide the necessary flexibility to enforce the schedules on a reasonable basis except possibly through the determinations of a conference such as this.

We, therefore, recommend that this conference consider the adjustments of the implementation schedules which were provided in 1967 to take into account all the important work that has been done in the last three years to bring about compliance with the approved water quality standards.

I'm not sure that it's proper for the conference, but I don't know any other place in the Federal operations that can do it, so I'm suggesting that it might be proper to be done here.

We would also enlarge upon Recommendation 2 so that the waste treatment that is going to be required would be high-grade secondary treatment at least, and make it applicable to all Long Island Sound discharges. And if you want to include Rhode Island, I'll accept that.

MR. STEIN: Make your motion.

MR. CURRY: I'm not sure what that means.

MR. STEIN: I don't know you should take it seriously. Just because we talk about the Long Island Reds, they're still with us.

MR. CURRY: What? I lost something. (Laughter)

MR. STEIN: I'll amend that to the Rhode Island Reds. (Laughter)

MR. CURRY: The Long Island Reds are a hockey team -- or are those ducks? (Laughter)

MR. STEIN: They're ducks. Whiteheads. (Laughter)

MR. CURRY: We lose something without interpretation. (Laughter)

We find no basic disagreement with Recommendation 3 except to comment that in many cases it would not be reasonable expenditure for promoting water quality until more work has been accomplished on other elements of the pollution problem.

We have been particularly careful, compared with other States with which the Federal Government does business

-- and we are sure of this -- to provide carefully considered implementation schedules. However, we note that some of the tabulated data on which Recommendation 4 may be based has to do with illegal discharges against which we have brought injunctions for discontinuance under our statute. To attempt to establish schedules would not be in conformance and would weaken our action against this type of polluter.

The important thing here is that this type of action will be of increasing importance upon the completion of our present program and it should not be watered down.

If you will recall, when Mr. Klashman asked us if we could provide schedules for all of these matters that you had tabulated, I said yes, with reservations, because I don't want to have to establish schedules for people who are discharging illegally. If they get into the court and the court wants to give them so many months to do something, that's all right. That's the court's function. But under our statute we don't have to, and I don't think we should water down our enforcement provisions to that extent.

So I agreed that we would give schedules where it was applicable and suitable, and I am sure you will agree.

Recommendation 5 is, of course, in compliance with our previous commitment to the Federal Government, and we would be glad to provide this addendum information in a formal way and with due regard for the comments that we have previously made.

The program of the New England River Basins Commission, which is given what I might classify as unequal representation in Recommendation 6 -- it's the longest one we have -- (Laughter) -- is questioned. We only question its applicability for the accomplishment of our present water quality standards implementation plan.

We should recognize the New England River Basins Commission is a planning agency rather than an enforcement agency, and I believe that the conferees should agree any such work outlined which may be accomplished in a planning procedure should not supersede our mutual agreements already made on enforcement or delay any implementation that we may have already agreed upon.

Actually, if such planning is accomplished, it will not be available until after the dates that were originally established for the accomplishment of our improved water quality, so that it is questionable as to what effect it could have in any case.

Our only comment on Recommendation 7 has already been made with reference to Conclusion 10, and this is a "gimmick" that we use to get audience attention.

We are, within our present program, and extending from it, carrying out the kind of study which we think is contemplated in Recommendation 8, and several problems of combined sewers are being eliminated in our ongoing program.

Our procedures in this matter have been reviewed by the Federal agencies, and we believe that we are proceeding in a practical and a satisfactory way to achieve solutions of these problems.

It is only fair to note that our State statute permits grants for the solution of combined sewer problems but that the Federal law does not. And so we say, "Come aboard."

Therefore, we are not aware of any firm Federal policy on these matters which would indicate the kind of detail that they want from the kind of study which is suggested.

I can't help but say undoubtedly some of the pollution of this type that is noted comes from problems in New York City, and the recommendation would be more effective if we knew that such major problems could be accomplished by the date that is recommended for us to do our study.

The State of Connecticut is in a fortunate position in being able to comply with Recommendation 9 and has done so for several years. This arises from a fact which might not be known -- due to the fact the Commission also has a duty, among other duties in the water resources field, of issuing permits for structures and dredging in tidal waters.

On such permits, when there is an indication that it might be an area of concentrated moorings, the Commission places a condition on the permit for construction of these mooring facilities which requires submission of a program which will control the discharge of sanitary waste, petroleum products, or trash, and the submission of any plans of facilities which may be required by such a program.

You see that such controls as we are exerting now can easily be made to conform with any rules and regulations that the Federal Government finally develops as required by the existing Federal statute for the control of small boat pollution, and we are set up and ready and willing and waiting to do it.

We would like to note that, in addition to the matters covered by these recommendations, the handling of pollution from Federal installations should be of interest to this conference. Whatever the proposals might be as you heard them presented, there is no record of a schedule of procedure on the elimination of these Federal sources of pollution, nor is there an indication of who, if anybody, will approve the engineering concept or the plans and specifications for these installations.

I asked the question of the Navy man. We are interested in this. Somebody should look at these programs, because we already have questions about some of them that have come to our attention.

Now, we're not anxious for any additional duties to review these plans of the Federal people -- and we also understand that there is some difficulty in State approval of a Federal facility -- but at least we'd like to know if there is a suitable review process to be exercised by somebody in some office.

We also note that although Recommendation 6 indicates the need for future planning, there is nothing in the report that considers the future discharges of sanitary sewage that may arise and are planned to arise along the north shore of Long Island.

If we talk to the report itself, leave the conclusions and recommendations, we have little comment on the first 12 pages of the text except those about the conference boundaries which have already been noted.

However, on page 13 there is an indication that in the future, sometime in the distant future, sewers -- and therefore treatment -- will be required for 100 percent of the anticipated population. Now, we're not sure that 100 percent of the population which exists at any given date will ever have to be sewered.

As we moved west, we had to get a wagon trail in, had to get a railroad in, had to get a telegraph in, and sometime later on, after the people go there, you need sewers. But I'm not sure that you need them waiting for the people when they first move out into the hinterlands. So I'm not sure that we will ever arrive at a situation where 100 percent of the population will be dependent on sewers.

On page 15 it indicates that there are five industrial waste sources in New York and 132 in Connecticut. This indicates to us that the Federal Government was more successful in obtaining information from Connecticut than from New York. And we think it has the same significance as the woman driver who put her head out the window for a left turn and it proved that the window was open. (Laughter)

One could observe almost five discharges without leaving the boundary of Connecticut.

Actually, this reporter's success was not too great in Connecticut either -- and we're trying to figure out what he was reporting -- but we estimate that on the kind of discharges that were being counted within the conference area Connecticut doesn't have 132 but it has 176.

Now, if we arrive at that number and we use it, that is 176 sources of discharges in 1967, and it might be of interest to a group like this to know what happens to those in a period of three years under our program.

Of these 176, since 1968, 81 have been eliminated as pollution.

Another 37 are on the schedules that we have proposed leading to the elimination, so we know they will be eliminated in the ordinary course of events.

Of the remaining 58, six have been referred to the Attorney General's office, and the remainder are held up for technical negotiations. This covers a great variety of reasons, and I probably couldn't do it, but if you want to talk to the engineers in my office, they can single out and show you the absolute reason why there is a one-, two-, or three-month delay in any step of the schedule of these individual polluters. And I'm talking about 52 that are remaining in the Long Island area.

In assessing the feasibility of schedules or the appropriate kinds of schedule changes which we have suggested might be a matter for this conference's consideration, the flow of funds into the grant area is an important consideration naturally. Not only must they be authorized and we know that somebody said we could have them, but they must flow through the bureaucracy into the program to fit a very complex set of actions that are required on each project.

Connecticut's success -- which would have been indicated by a correct tabulation of the last three years of operation -- is largely dependent on its rather magnanimous attitude in providing funds to cover up for the Federal Government when they don't have them available. These funds as of March 31, 1971 amount to $84 million that the State has provided. That is a large chunk of money.

Of course, if Congress doesn't appropriate, the situation must be faced by any State the way Connecticut has done it. We put out the money. We accept the difficulties of it.

But we will note that the last Congress and the President during the period of last fall, September-October, did take action to correct this hedge of the Federal allotment procedures, and there's now $200 million -- or I guess it has been sliced off to $150 million before it got out of Washington -- but $150 million that was made available to repay the States who had made these efforts to cover the Federal amount.

This was last fall, but these funds have not yet got through the bureaucratic process. Our last word indicates that the funds must be obligated and fully expended by June 30th of this year, which is only a couple of months away.

We would recommend that careful consideration be given to the method of disbursing such funds, because this is a very short period and your operation will have to be very fast so that the maximum benefits can accrue to our pollution abatement program.

Also, we recommend that future funds of this type be disbursed more quickly than from September to June. We are afraid that some of our municipalities might get paid twice, and we wouldn't want that to happen -- (Laughter) -- if the State does get paid.

MR. STEIN: Well, it might happen you get paid once.

MR. CURRY: We'd love to get paid once. (Laughter)

MR. STEIN: We figure if municipalities get paid twice we can equalize that, and on the average you will get paid once. (Laughter)

MR. CURRY: If we get paid once, that would be one up.

MR. STEIN: Right.

MR. CURRY: To complete the picture on the Connecticut side of Long Island Sound, in relation to the industrial discharges it should be noted two of those listed are now the subject of injunction proceedings because they were illegally established.

We have already commented on the distinction between criteria and water quality standards.

We noted in some cases the high bacteria counts were obtained in the nonrecreational season and, therefore, are less likely to be a hazard than those which would be existing when waters were used for recreation.

We note that the extensive work done to determine existing water quality agrees with the assessment that we had provided to the Federal Government in our water quality standards negotiation. So we assume that the fact that they agree with us indicates a high capability of the Federal agency to do sampling and analysis. (Laughter)

So without going into any more detail or being picayune, we suggest that we get together and correct the tabulations. The only changes in the implementation plans are made by formal acts of our Commission at its regular monthly meetings, and these matters are available to the Federal agency on IBM cards or printouts from them. It is, therefore, a relatively easy matter to correct these little things that we are talking about.

We recognize that a reporter should have the privilege of his own method of presentation. But this report and this conference do have at least a secondary purpose to generalize public opinion, and so it seems improper, as an example, to indicate that the city of Bridgeport -- and I'm only using that as an example -- is in some manner violating some kind of an established standard without also indicating that in compliance with State and Federal programs it is concurrently enlarging and upgrading two large treatment plants at a high cost and with none of the fanfare of intergovernment arguments or exchanges or charges or countercharges.

The procedure has elements which must make it unique throughout the country, and it should have been a matter of interest I think in this report.

It might also hurt the people of Fairfield to find out by reading this report they have primary treatment, when they actually built 20 years ago a very high-grade, super-high-grade, secondary treatment plant. And, not only that, they took the outfall from the secondary plant and extended it far enough out into the sound so that even when the tide changed and it happened some day that the plant wasn't working, the pollution could not be washed back by the tide to the beach.

This is an extensive expenditure made long before the Federal Government even had $250,000 to contribute to such a plant.

It might hurt those people to know that the Federal Government only thinks they have a primary plant.

Or the people of Branford to think that the Federal

Government doesn't know they have a plant which is a secondary high-grade treatment plant which has been there for a great many years.

Now, this could go on.

But just to single out another way that the Federal Government could be of help to Connecticut and its problem, we have a city in which we could have avoided what will be a forthcoming long legal battle, costly and time-consuming, if we could have gotten letters from the Washington office in which the "Federalees" indicated that they agreed with the Regional Office.

So I would suggest if you can write a letter saying Washington agrees with Boston, we'll save four or five months on an implementation schedule, and I think it could be done with a simple memorandum.

Well, I can go on, but I think that we have gone far enough as far as Connecticut's attitude is concerned, Mr. Chairman. I assume that you agree with Mr. Ruckelshaus and that you are here to be of maximum assistance to the States in their program, so I tried to indicate some specific points at which the action of this conference could do things that would be helpful to the State of Connecticut -- actions by the Federal Government that would be helpful to the State of Connecticut.

It was only by mere happenstance that I found nothing in the report which indicated any action that the State of Connecticut could take that would increase the rate. But I will say that this is subject to negotiation in our executive session.

MR. STEIN: Are there any comments or questions?

MR. KLASHMAN: Mr. Curry, I would like to merely comment first on the question you raised about Westerly, Rhode Island. We will certainly be in touch with Rhode Island on this to see what we can do about having the degree of treatment changed to meet the water quality standards in Connecticut. Your point is well taken.

On the question of the New England River Basins Commission report, on page ix, the last sentence in that recommendation states that none of these activities, speaking of activities to be carried out by the New England River Basins Commission, shall be construed as superseding the existing water quality standards implementation schedules or the recommendations of this conference. So I think that the recommendation is in complete accord with your views on this.

As far as the tables are concerned listing the sources of pollution, do I understand that you will furnish us a corrected table with the proper information?

MR. CURRY: We will so do. And we prefer maybe when we are doing this to sit down with your people and have a discussion.

MR. KLASHMAN: Fine. On those sources where you say you have reservations, we will so indicate that these are cases where the communities or industries are in default and that interim dates at this time are not indicated.

It is my understanding that we will shortly be hearing about this $150 million that you speak of. I too would hope for reimbursement to those States which have prefinanced projects. I think Mr. Metzler also has a slight interest in this.

MR. METZLER: Yes.

MR. KLASHMAN: I would also like to ask Mr. Stein to carry back this message, that we heartily endorse the need for some action very quickly from Washington on this.

MR. STEIN: Well, you're the regional coordinator. I'm the enforcement man. You have a direct line to the financial operations, Mr. Klashman.

MR. KLASHMAN: I too assure you, Mr. Stein, I will bring this message back to them.

MR. STEIN: Are there any other comments or questions?

(No response.)

Mr. Curry, I was really impressed by your extensive recital. Something you said earlier really impressed me. I guess you and I can tell our nephews to please be brief. But, Jack, at our age it takes a little longer. (Laughter)

MR. CURRY: I would have been, but you usurped all the prime television time. (Laughter)

We have some other people in from Connecticut. I don't know whether you want to hear them now --

MR. STEIN: We want to go ahead.

MR. CURRY: -- or hear the conferees first.

MR. STEIN: No, call on your own people.

MR. CURRY: I believe Dave Wiggin has a statement which should be of interest because he is deeply involved in these pollution problems.

STATEMENT OF

DAVID C. WIGGIN

DIRECTOR, ENVIRONMENTAL HEALTH SERVICES DIVISION

CONNECTICUT STATE HEALTH DEPARTMENT

MR. WIGGIN: Mr. Chairman, members of the conference, you know, after listening to Jack talk, I almost got up and left because I figured anything I'd say would be superfluous. But I was sitting listening to him and I didn't think to get up.

Also, the previous speaker told so much about shellfish in Connecticut that I'm not sure I can add anything to that subject either. However, I did prepare a few words, and I would like to say them.

My name is David Wiggin, the Director of Environmental Health Services Division with the Connecticut State Department of Health.

The Connecticut State Department of Health has the responsibility for classifying the waters of Long Island Sound as to their sanitary suitability for bathing and shellfishing. In this connection, approximately 2,800 samples for bacteriological examination are collected from the tidal waters annually during the summer months for the purposes of classifying the waters for bathing purposes.

Sampling stations are located every 1,000 feet, and four samples are collected from each station. Half of the State is surveyed each year in this manner.

All sewage treatment plants chlorinate the effluent between May 1 and October 1 in order to protect recreational activities such as bathing and boating. The analysis reports for the past 20 years are punched for data processing, and each year copies of the punched cards are sent to the Environmental Protection Agency office in Metuchen, New Jersey, if that is still part of the EPA. Is it?

MR. STEIN: They changed the name to "Edison" from

"Metuchen."

MR. WIGGIN: I beg your pardon.

MR. STEIN: Thomas Alva.

MR. WIGGIN: Next time we send samples I ask that you send us the new address, because we punch duplicate cards and send them to you.

Generally speaking, the areas in Connecticut which are found to be not suitable for bathing purposes are the inner harbors near the major cities such as Stamford, Norwalk, Bridgeport, and New Haven. However, under certain adverse conditions, such as temporary interruption of sewage treatment or the overflow of combined sewers following a heavy storm, the pollution could extend to the outer harbors into areas which are normally suitable for bathing.

Local health departments collect frequent samples to check the sanitary quality of these questionable areas. If the samples are unsatisfactory, the beach may be closed temporarily until satisfactory samples are obtained. The bathing beach sampling program which has been in existence for over 20 years has shown no discernible increase in pollution, although there have been fluctuations in water quality apparently due to variations in the efficiency of treatment at certain sewage treatment plants during the time of sampling, as well as effects of storms on the treatment plants, combined sewers, and the river flows.

It should be kept in mind that this classification is based on coliform content only, and this is effectively controlled by chlorination.

The State Department of Health also carries out shellfish classification studies along the shores of Long Island Sound. Additional areas of tidal waters are continually being closed for shellfishing purposes. The reason for this is the increasing pollution as well as an increasingly restrictive cooperative State-Federal policy for classifying such areas.

In years past, most of our concentration on shellfish sanitation was on the prevention of typhoid fever, and the record on this disease has been outstanding. There has been only one death from typhoid fever in Connecticut from any cause since 1949. In comparison, there were 278 deaths from typhoid fever in 1900 and 166 deaths in 1910. In 1940 it was down to three to five deaths per year.

In the past 10 years, the total number of cases -- not deaths but cases -- of typhoid fever, the total for 10 years, was only 34. If typhoid fever had continued to be the controlling criterion, some shellfish harvesting areas would have remained open and the record would be good.

However, while the number of cases of typhoid fever decreased, throughout the country we have had an increase in the number of cases of hepatitis, as pointed out earlier, caused by a virus. In Connecticut, our record also has shown an increase. The number of cases of hepatitis in Connecticut in 1961 was 483, while the number of cases in 1970 was 1,056. Not all of these cases were due to shellfish, but we have had several outbreaks attributable to shellfish.

In the shellfish program, we carry out an evaluation of the areas, including sampling, float studies, and sanitary surveys. We then determine the worst possible condition which might affect the sanitary quality of the harvesting areas. Shellfish areas which do not meet the necessary standards even under the most adverse conditions must now be closed unless the State agency can give assurance of controlling the use during such a situation.

Furthermore, areas subject to potential contamination, such as at marinas, must also be closed.

We feel that the provision of secondary treatment with chlorination at all sewage treatment plants discharging into the tidal waters will virtually assure the safety of all existing bathing areas in the State for a great many years to come. Also, some questionable areas will become satisfactory. Such secondary treatment will also increase the potential for shellfishing in the State.

David C. Wiggin

However, combined sewers with stormwater overflows complicate the health problem. In order to utilize this potential, the State Department of Health would have to go into a program of conditional classification -- I enjoyed the discussion earlier -- which involves a much tighter degree on monitoring and control of both sewage treatment plant operations and the activities of the shellfish industry.

The State Health Department is not presently in a position to assure such control due to limitations of staff and money and, therefore, it is not likely that many closed areas will be opened.

However, if depuration of clams and oysters could be established as a standard procedure, we believe the shellfish program would be protected and it is likely that some presently closed areas could be reclassified.

We recommend that the Federal agencies promote the necessary research work to develop this procedure. If this procedure were effective in Rhode Island, Connecticut, New York, and New Jersey -- and we believe it would be successful -- we believe, as Mr. Curry pointed out, and he's doing some of my health work for me, that it would give us the same protection for shellfish or similar protection at least that we now have for milk.

Back 50 years ago I can remember people objecting to pasteurized milk. And a few years after that -- because I can't remember a lot of details 50 years ago -- but a few years after that I remember going into a restaurant and having a man talk about the scalded milk and getting up and walking out and leaving his glass of milk on the table.

But I do believe that depuration would give us similar protection to what we get from pasteurized milk and chlorinated water. We do not drink unchlorinated surface water in Connecticut in any of our supplies, nor do we drink raw milk, and it would seem that we certainly should not eat raw oysters and clams, and I'm one who believes that we should develop a program for depuration and make it mandatory.

We have also made a special study for mercury. Samples of water were collected from the three main river basins, the Thames, the Connecticut, and the Housatonic. All water samples were well below the figure of 0.005 ppm which the Public Health Service has proposed as a standard for drinking water.

We have also collected samples of fish from the three main river basins, and the samples from each river averaged well below the limit of mercury in fish of 0.5 ppm which has been established as an interim guideline by the United States Food and Drug Administration.

We have also collected samples of shellfish from New Haven, Bridgeport, and Norwalk Harbors, and the samples from each harbor averaged well below the limit of mercury in shellfish of 0.2 ppm which has been established as a tentative standard by the United States Public Health Service.

We are now making further study for other heavy metals in water, fish, and shellfish.

Thank you.

MR. STEIN: Thank you, Mr. Wiggin.

Any comments or questions? If not, thank you very much, sir.

MR. CURRY: The League of Women Voters in Connecticut had a statement, but I believe that Mrs. Brown is not here, and I'm not sure she left a statement.

MR. KLASHMAN: She left a statement.

MR. CURRY: Did she leave anybody the job of giving it?

(No response.)

I think we will save time if we can make it a part of the record. I present it in the record.

MR. STEIN: That will be entered into the record as if read.

MR. CURRY: It is our loss. She is not only a charming lady, but her voice would be nice counterpoint to the masculine voices we have had here.

STATEMENT OF
MRS. BERTRAND H. BROWN
DIRECTOR, ENVIRONMENTAL PROJECTS
LEAGUE OF WOMEN VOTERS OF CONNECTICUT

Long Island Sound is one of the greatest natural resources of the Northeast. For centuries man has used it and abused it. We have used it for navigation and trade, recovery of sand and gravel, cooling water for power production, marinas, industrial waste and garbage disposal. Yet we also expect it to provide shell and fin fish habitat, commercial and sport fishing, plus unlimited outdoor recreation for the millions of people who live nearby. And now we are beginning to realize that the sound is a limited natural resource and that the public good requires us to repair some of the damage that has been done.

The League of Women Voters has a longstanding interest in water resource planning and management and is particularly concerned with the improvement of water quality. We commend the Environmental Protection Agency for convening this hearing, for it will focus attention on the problems of Long Island Sound and will surely accelerate the lengthy process of pollution abatement.

We in Connecticut are very proud of our Clean Water

Program, one of the finest in the Nation. Yet the State needs continued cooperation from the Federal Government if the program is to be a success.

Specifically, Connecticut needs dependable financial assistance. As you know, the State prefinances the Federal grant to municipal treatment plants. It is important that this money be reimbursed regularly so the State may carry out its own assistance program for municipal treatment plants. The State government is in serious financial difficulty and without the promised Federal assistance might be forced to cut back on some of its grants. We urge the EPA to do everything in its power to ensure a reliable continuing program of adequate Federal aid.

On the matter of industrial pollution, the League of Women Voters is pleased with the heightened Federal interest in abatement as evidenced by the reactivation of the 1899 law requiring permits for industrial discharges from the Corps of Engineers. We are somewhat confused, however, as to the way the Corps fits into the enforcement picture and ask that procedures be carefully worked out so that State enforcement powers are in fact strengthened and delaying red tape is avoided.

It appears to us in the League that several aspects of pollution abatement on Long Island Sound are primarily a

Federal responsibility. One of these is the cleanup of oil spills at sea. Since the State cleans up spills near shore, it appears there is a need for a better definition of responsibility between the two -- a clear statement of who is supposed to do what. There is also a need to develop better methods of cleanup. Federal leadership is clearly indicated here.

Long Island Sound also suffers from pollution by boats. The State can do nothing to alleviate this until the EPA decides how the Federal legislation on boating pollution is to be implemented. The League urges you to make this decision soon. It is too late to do anything in time for the coming summer, but, please, make it possible for the State to require installation of necessary shore facilities in time for the following boating season.

Navy and Coast Guard vessels continue to pollute the sound. They are pretty much out of reach as far as the State is concerned. We ask the EPA to exert its considerable influence toward the installation of pollution control devices on Federal craft.

The League of Women Voters of Connecticut is pleased that both the Federal Environmental Protection Agency and the State of Connecticut are concerned with accelerating pollution abatement in Long Island Sound. We urge you to intensify your efforts.

Thank you for the opportunity to be heard.

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MR. CURRY: There was an Esther Boyle who asked if she could speak at this conference, and the reporter led her to you, Mr. Stein.

FROM THE FLOOR: She will be up tomorrow.

MR. CURRY: Then we have a representative of the combined fisheries groups of the State, Mr. Kirychuk.

STATEMENT OF

JOHN I. KIRYCHUK

CHAIRMAN, CONNECTICUT SPORTSMENS NATURAL RESOURCES

MR. KIRYCHUK: Mr. Chairman, members of the committee, ladies and gentlemen, I will omit from my statement portions of it but request it be put on record.

MR. STEIN: The entire written statement will be included in the record as if read.

MR. KIRYCHUK: My name is John I. Kirychuk. I am Chairman of the Connecticut Sportsmens Natural Resources -- clubs, marinas, bait and tackle shops, private citizen groups. Sportsmen's liaison representative by legislative petition (signed by members of both parties). And I represent some sportsmen in Rhode Island and harbor pilots.

On April 5, 1971, as State chairman in Connecticut of sportsmen's clubs and other organizations, I as the leading speaker, with league leaders, did represent some 250,000 residents of Connecticut.

During my personal exposure on Channel 30 television, I requested the support of the sportsmen and supporters, including the members of the legislature. I received a long standing ovation. And as the cameras have filmed, not one individual could be seen sitting when my request was given cheers and human reactions. I notified all those within hearing that I would represent them at this hearing, as I did on July 7, 1970.

In Connecticut we have once and for all time eliminated the stigma, the bias, prejudices, and unjustifiable criticisms. We were heard in Connecticut in the State Capitol one week ago today by many, many thousands, being represented, and we demand to be fully recognized here, not only as residents and taxpayers but as excise taxpayers with little or no return.

As an individual who has by request from the White House to the individual citizen made thousands of investigations, I feel that my technical expertise has benefited not only Connecticut but the Federal Government. As an individual who has researched both pollution occurrences and the laws providing protection, I find it disgraceful to the intelligence of the taxpayer.

From the President's office down through every bureaucratic agency and department, my facts, criteria, and data have never been disputed or proven partially fabricated. In fact, every scientist, engineer, government official, Senator and Congressman, as well as Governors, have agreed with my findings.

I have some excerpts from letters that I recently received, and I will read just a line or two from each of these letters.

From the Office of the Secretary, U. S. Department of the Interior:

"Your letter to President Nixon expresses concern -- a waste of the taxpayers' money.

"I have asked the Commissioner of the Federal Water Pollution Control Administration to look into the matter, and advise me as well on the other points you raise. As soon as I have his report I will be in touch with you.

"In the meantime, rest assured that this Administration, this Department, and this office intend to enforce the water pollution control law now on the books whenever and wherever necessary and in the public interest. To this end, we trust that we have the support of the Connecticut Sportsmen."

From the White House:

"John Ehrlichman has asked me to reply regarding a position on a water pollution council."

This is a 13-man council which privately helps the President out.

"Mr. Ehrlichman appreciates your interest and enthusiasm and has forwarded your letter to Harry Flemming, Special Assistant to the President for personnel. He has also sent a copy to Russell Train, Chairman of the Council on Environmental Quality for his attention and consideration."

From the Department of the Interior -- and this might have helped the Navy and Coast Guard. This was signed by Mr. Prince.

"You are correct concerning the date not coinciding with the recently issued Executive Order 11507."

And I say the FULTON has already left.

"This order requires Federal facilities, including vessels, to have abatement completed by December 1972. Subsequent to the issuance of this order, Congress passed new legislation which also applies to pollution from private and other watercraft."

Here I would like to interject that a great deal of our pollution on the sound is by barges and tankers and ships under foreign registration because they are not good enough to be registered in the United States. So, in other words, we are getting garbage scows to bring in the oil.

From the Department of Justice:

"The Federal Water Quality Administration has referred to us your letter of February, relating to a writ of mandamus" -- which I intend if I am forced by the sportsmen or requested to institute in the Justice Department in Washington.

"We suggest, therefore, that if you believe legal action is necessary. . .The Department of Interior through the Federal Water Quality Administration has been alerted to this problem, and will doubtless refer the matter to us for litigation."

Governor Meskill has recently asked my personal investigation results and report on the last big spills in Long Island Sound, which he has received December 24th and January 8th, when I sent them to him. He writes:

"I will keep you advised if I receive any further information regarding your application for appointment to the President's Advisory Council on Water Pollution."

Senator Ribicoff has always given me full support, and his statement here in the letter says:

"Thank you very much for your recent letter regarding the pollution of Long Island Sound. I appreciate receiving your informed views and will submit your letter to be printed in the record of the hearings."

Senator Weicker also made a statement. He pledges 100 percent support for abatement of pollution on Long Island Sound, and he will, if necessary, institute other legislation to make sure that it is enforced properly. And I personally have communicated with Senator Weicker concerning the New Haven area. I informed the Governor in November that it would be a "Dead Sea" area, and I believe the Corps of Engineers have indicated it as a "Dead Sea" area in the first week of February.

I have made pollution reports to Governors, Senators, Congressmen, Presidents, and Federal agencies many times before. My firm and positive opinions follow.

The shores, waters, and rivers emptying into the sound are being destroyed by corruption and greed, lax enforcement, failure of the Federal Government and State government to act in activating the existing laws provided to protect the public, by indifference and apathy of bureaucratic agencies who rob the taxpayer, by not cooperating and by competing for power, diverting funds, extending goal dates, and with committees that have been exposed by the news media as farces.

In fact, I was investigating the last three committees of the past Administration. I was one of the investigators.

The millions of people who realize the values of the lands and waters of Long Island Sound and those directly related to the sound have constantly provided the nucleus of protection of this life, for there is no substitute, physical or one of imagination, for the activities in, on, or around the sound on this planet.

I have witnessed many changes and innovations that were put on paper for paper has no resistance. The trick has always been to make them work. Honesty of thought and written word is a jewel, and they who curb prejudice and seek honorably to know and speak the truth are the only builders of a better life. I wish Agnew was here now.

Billions of dollars have been wasted, while rape, devastation, exploitation, and permanent and unrepairable damage is continuing each second of the tick of the clock. Even with the executive orders of the President of the United States and billions of added tax dollars, 100 percent increase in personnel, the responsible jurisdictions sit on critical cases -- and this is true right in our Attorney General's office in the State of Connecticut -- which according to the laws are priority cases and in the books.

The livelihood of millions of people is dependent on Long Island Sound. The normal wildlife and aquatic life cycles are decreasing astronomically. With laws and technology available, death continues. There is no applicable price tag from which one could possibly evaluate our natural resources.

Now is the time for the Federal Government to step in immediately. Over 100 spills have occurred on the sound during 1970 that are a matter of record, and I assure you it's twice as much that were whitewashed. Many more were not recorded. But each spill, no matter how small, is critical to a life cycle area.

The constant surveillance of the Coast Guard, sportsmen's organizations, and the many other related conservation groups is commendable but not sufficient to even arrest the continued pollution. As the news media, investigations, research, and scientific predictions indicate, the Federal Government must immediately activate its prerogative and authority with a firm and positive direction of action. Money alone will not control or improve and preserve our irreplaceable natural resources.

There are 11 million people who live in and around the sound area. Many millions visit the sound each year, and the numbers are increasing daily. I believe we have taken a tentative figure that if the sound is deteriorated to that point there will be as many as 50,000 jobs involved.

There are 16 "Dead Sea" areas in the sound on record.

MR. STEIN: Who has jurisdiction of those "Dead Sea" areas? The Corps of Engineers?

MR. KIRYCHUK: The Corps of Engineers.

MR. STEIN: That's what I figured. Thank you.

MR. KIRYCHUK: I have documents for everything I say, Mr. Stein.

MR. STEIN: Yes, sir. Go right ahead.

MR. KIRYCHUK: There are hundreds of water pollution discharges into the sound every second -- chemicals, oils, human waste, toxic materials, nutrients, solids, and the deliberate and accidental spills.

If the laws as written on the books are not enforced, then the constitutional rights guaranteed by the Constitution to every American are jeopardized by the Federal Government who has allowed the lawbreaker freedom from responsibility. Then the government is not for the people or by the people in freedom of the pursuits of the individual instincts.

For those I represent, and in conclusion, I say the time is now. No other recourse is possible. Nor will further studies and delays solve the situation, but waste the taxpayers' dollars and allow the permanent and irreparable damage of our natural resources, terminating thousands of jobs, adding to the social and welfare problems, and depleting our economy beyond any reclamation and stability in the area.

My research records and investigations, many of them, are in the Department of the Interior now or in the hands of Robert L. McCormick or Charles Rogers or in the Executive Branch. In the President's office it would be John Ehrlichman, Mr. Sloan, Mr. Flemming.

Thank you very much.

MR. STEIN: Thank you very much.

MR. CURRY: Mr. Chairman, as you see, we have a very broad spectrum of Connecticut citizens interested in this today.

Do you want to --

MR. STEIN: I want to see if there are any comments or questions. If not, thank you very much.

I tell you we will go to about 5:00 o'clock today. I suggest we recess now. We are going to continue with Connecticut. I suggest we hear the people who want to speak from Connecticut, and the people who feel they have to get out today from New York get in touch with Mr. Metzler, and we will arrange to have all those who have to get out today be on this evening before we recess for the evening.

So we will stand recessed now. Anyone who feels he wants to get on today from Connecticut or from New York see either Mr. Curry or Mr. Metzler, as the case may be, and make your arrangements.

(Whereupon, a recess was taken.)

MR. STEIN: I have a statement here I would like to put in the record from Mr. M. E. Wiggin, United States Department of Agriculture, Agricultural Research Service, Animal Disease and Parasite Research Division, Plum Island Disease Laboratory, Marineport, Long Island. The address is almost longer than the statement.

The statement reads:

STATEMENT OF

M. E. WIGGIN

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

ANIMAL DISEASE AND PARASITE RESEARCH DIVISION

PLUM ISLAND DISEASE LABORATORY

MARINEPORT, LONG ISLAND

Because of the unique and specialized treatment required at Plum Island Animal Disease Laboratory with sewage effluent, it is recommended that an engineering study be accomplished to determine the most feasible method of disposal to meet the requirements of the executive order.

It is planned that negotiations with an engineering firm to conduct the study will be accomplished in July of this year.

- - -

MR. STEIN: Do we have anyone from the Region here? Are you familiar with that, Mr. Bromberg? Are you familiar with Plum Island?

MR. BROMBERG: Vaguely. Yes, I know where it is.

MR. STEIN: I guess you didn't listen. He says "because of the unique and specialized treatment required at the Plum Island Disease Laboratory." What kind of unique and specialized treatment? Can't a lagoon handle those fellows?

MR. BROMBERG: That was sterilization procedure because they deal with animal control and virus control systems and do animal research. They require a sterilization procedure.

MR. STEIN: Before they put it in?

MR. BROMBERG: Before discharge.

MR. STEIN: You mean they are discharging it now without sterilization?

MR. BROMBERG: No, they are doing it right now.

MR. STEIN: What is the specialized and unique treatment?

MR. BROMBERG: Go ahead with the complete secondary treatment system.

MR. STEIN: What's unique and specialized about it?

MR. BROMBERG: Nothing really, sir.

MR. STEIN: All right. Thank you.

Mr. Curry.

MR. CURRY: As I mentioned after the last speaker about the Connecticut people in the audience, we have a very wide spectrum of interest. And we have Dick Benoit who is knowledgeable on these matters and generally has some unusual and interesting comments on our kind of work.

Dick, would you like to say something?

STATEMENT OF

RICHARD J. BENOIT, Ph.D.

DIRECTOR, ECOLOGY LABORATORY

ENVIRONMENTAL RESEARCH AND APPLICATIONS, INC.

NORWICH, CONNECTICUT

DR. BENOIT: I don't think I have anything very unusual or special to say.

MR. STEIN: Why don't you identify yourself?

DR. BENOIT: I will. I am Richard J. Benoit. I am Director of the Ecology Laboratory of Environmental Research and Applications, Inc., of Norwich, Connecticut.

For three years the scientists from colleges, universities, government laboratories, and industries surrounding Long Island Sound have met in annual informal research planning colloquia. The first was held at Yale, the second at Stony Brook, and the third and most recent one at the Avery Point, Groton, Connecticut campus of the University of Connecticut.

In spite of the information that is exchanged at these colloquia and in spite of the limited informal coordination that can come out of that kind of a meeting, no comprehensive research plan has come into being for research on Long Island Sound. No single research project of the scope and quality comparable to the work covered by the publications of Dr. Gordon Riley of about a decade ago is in the course of being carried out.

The New England River Basins Commission has apparently been assigned the Federal coordinator's role. We all hope that the Commission will integrate the private sector into its planning. If all the Commission can do is coordinate the activities of the Federal operating agencies, I fear that it will become an ineffectual bureaucratic instrument.

In the absence of a full-fledged participation of the private sector, I fear that pollution abatement in Long Island Sound will drag and we will not gain in a timely way the new knowledge needed to assure that the most water quality improvement will be purchased for the dollars spent.

Even in the absence of coordination, some money will buy some water quality improvement.

There is an outstanding array of research facilities and professional talent in the institutions surrounding our beloved Long Island Sound. At these annual research planning colloquia these institutions and individuals have expressed their interest and commitment. At present they lack the resources to carry out the work that they plan. The Federal treasury must be the source of those resources.

Thank you.

MR. STEIN: Thank you. Are there any comments or questions?

MR. METZLER: Yes. I think it's very helpful to have someone from the research community here, and I compliment you on the statement.

I think it would be very helpful to the conferees if you could identify, say, the two or three most pressing research problems that you see needing attention as far as the sound is concerned.

DR. BENOIT: I think one of them is the exchange of water across the Throgs Neck, and the other is the exchange of water across Block Island Sound.

I find it very difficult to understand why Block

Island Sound is not included in the jurisdiction of this conference. It seems to be physiographically part of the body of water that we are concerned with. And in the same way that the pollution of the sound by rivers emptying into it is important, the pollution of Block Island Sound by Long Island Sound, if in fact that occurs, is an important problem.

I still don't think we know as much as we should know about the exchange of water between Long Island Sound and the East River and the North River.

MR. GLENN: This was done back in 1959, and we would be glad to furnish you this information if you would like to have it.

DR. BENOIT: I'm familiar with the information from the work in 1959. I consider it to be a far from complete story.

MR. METZLER: Your response not only is helpful but it also brings some additional questions to mind.

Is some of this research needed before these pollution abatement efforts are implemented? What are the kinds of things that need to be done now and have a high priority because they influence how we abate pollution?

DR. BENOIT: I think the answer to your question is in the general statement that I made to the effect that some money will buy some pollution abatement. If it is important to optimize the economics, if it is important to get the most out of the resources that we can devote, all of us, the government, the industries, the cities, if it's important to get the most for our money, there's a lot of research on Long Island that needs to be done.

It boils down to a question of, first of all, bringing into existence a system which will tell us what the water quality is at some number of locations and at the same locations some time from now after some money has been spent. A system for water quality monitoring in Long Island Sound doesn't exist yet. A suboptimal system could be put together if anyone is interested in having it. I say suboptimal just by way of repeating my earlier statement that some money will buy some abatement and some money will buy some amount and quality of monitoring.

MR. METZLER: I must confess I'm not satisfied with your answer, because my question was: If you had some money to invest, what's the top priority for research? And I assume that with the universities and the private sector meeting here and discussing these problems you must have some concept of what you think the top priority problems are as far as research is concerned, and I would just like one example.

DR. BENOIT: Well, I think I have given you two examples.

MR. METZLER: Okay.

DR. BENOIT: I think though the point that should be made in answer to your question is that these research colloquia that have been held do not result in a coordinated plan of research. They do not establish priorities in a research program. They are simply a discussion of the research projects that are deemed to be important and interesting to the individual scientists who participate in the discussions.

MR. STEIN: We understand that. But let's get back to Mr. Metzler's question which I share with Mr. Metzler as an administrator will always be the most pertinent question, the most interesting one of our time.

Mr. Metzler together with the other panelists and myself are going to have to come up with a decision maybe within the next day or certainly not more than the next five weeks on how we move ahead with the pollution abatement program if we do anything on Long Island Sound. And we are going to have to make these determinations.

I think his question that he asked you was: Are there any decisions that we should be able to or should define in order to get some reasonable research answers before we make these decisions?

Now, I tried to listen very carefully to understand what you are saying. You are saying we should check the condition of the water beforehand, go on with our program for remedial action, and check the condition of the water afterwards and see what we did.

If this is the case, I can understand it. But Mr. Metzler has said what he was looking for, and I think what he was looking for was a statement by the scientific community which was going to aid us in his administrative problems.

I think to put it very briefly, I have heard this many, many times, as Mr. Metzler has, from the scientific community. You just have to bring the aquatoria and the colloquia closer together.

DR. BENOIT: Well, I'm not here as a spokesman for the scientific community, first of all.

Secondly, I'm not here as an adviser to either the Federal Government or the State of New York.

I have made certain simple recommendations that I hope the conference in its executive sessions will take into account.

I don't think that these research planning colloquia have established any clearcut set of ordered priorities for research on Long Island Sound. I hope that the New England

River Basins Commission in its role as Federal coordinator will be able to do this.

I fear, however, that if their role is limited to the coordination of the operating Federal agencies, they will not succeed. I think that it is critically important that the Commission find a way of integrating the activities of the private sector into the planning process.

MR. GREGG: Dr. Benoit, may I comment? I am trying to respond to Dwight's question about some current research priorities. As I recall, there was a paper prepared by one of the departments of the University of Connecticut called "A Research Strategy for Long Island Sound" which I think did have some priorities in it.

If anyone is here from the University of Connecticut -- I think Dick may know about that paper -- we could provide a copy of that for the conferees. This would give us what at least a few people who are working on it saw as research priorities.

I might comment on the question of research coordination. And I should note that all the members who are sitting here are members of the New England River Basins Commission, and, in effect, these people are the water quality planning people who do the work on water quality that is done in the name of the River Basins Commission. We are about to set up an ad hoc research advisory committee for the specific purpose of trying to bring the private research community in, to try to arrive at some research priorities over the next few years.

Now, I know enough about the research community to know that no one tells the research community what its priorities are, but we can discuss these priorities with the research community, and, hopefully, we can get -- and our explicit intention is to try to help to work out -- some priorities to which money can be allocated.

We hope also that we can use whatever influence we have to help get funding, public funding, for research programs which are directed at answering these priority questions.

So we discussed this at some length at the meeting we had here in New Haven on March 25 and 26, and we are quite serious about this, and we think we can make a contribution here and intend to do it.

MR. STEIN: Are there any other comments or questions? Yes, Mr. Peloquin?

MR. PELOQUIN: Dr. Benoit, I hope by your statement that some money will buy some abatement you are not inferring that we should delay abatement activities until some of these other problems have been resolved.

DR. BENOIT: No, I mean by that statement to say that we ought to go ahead and spend some money and get whatever pollution abatement we can for our money at this point of knowledge.

MR. GREGG: May I ask one other question? Do you have reports from those three colloquia that have been held that you could provide to the conferees?

DR. BENOIT: No, the proceedings of the colloquia are not recorded and not published.

MR. STEIN: Are they open?

DR. BENOIT: Yes, they are open to the general public, although the organization of the colloquia is quite informal. It's usually the responsibility of the host institution. I'm not sure that the complete mailing list from one colloquium to the next gets transferred from host institution to host institution.

But there has always been a very good representation of the research talent in the institutions surrounding the sound at those colloquia.

MR. STEIN: Thank you.

Are there any further comments or questions?

(No response.)

If not, thank you.

Before we go on, I would like to make one announcement.

I am informed -- I must say this is hearsay, but I will make the announcement anyway -- that the Corps of Engineers has suspended immediately discharges by Pfizer pending meetings with our agency.

Mr. Curry, would you continue?

MR. CURRY: We have Mr. Richards Nelson in the audience. He is already on the record as providing some information concerning the oyster situation. He is an oysterman of many years and member of the Shellfish Commission of the State of Connecticut.

STATEMENT OF

J. RICHARDS NELSON

PRESIDENT, LONG ISLAND OYSTER FARMS, INC.

NEW HAVEN, CONNECTICUT

MR. NELSON: The name is J. Richards Nelson, President of Long Island Oyster Farms, Inc.

Just as a matter of perhaps interest, one of the predecessor companies of Long Island Oyster Farms was F. Mansfield & Sons Company that was founded in 1846 in New Haven and was continually in business until 1968 when they sold their assets to Long Island Oyster Farms.

My remarks will be brief. The oyster is a brackish water animal. As has already been stated, its natural habitat was in the lower reaches of rivers coming into the salt water and the estuaries along Long Island Sound, which is the reason that Connecticut's area has been historically a great area for oyster production. Chesapeake Bay is probably the greatest area for production in the world, and that is because of the great rivers that come in there to the salt water.

The fact that the oyster is an estuarian animal, of course, makes it highly vulnerable to pollution. And, Jack Curry, I'll agree that there are many things that kill an oyster besides pollution. And I think 29 reasons are not the complete reasons. I think there are at least 30. (Laughter)

But, in fact, pollution and associated things with pollution I suppose -- if you call silt "pollution," which I certainly do -- the destruction of the environment in the estuaries, in the lower reaches of our streams, and the inability of the parent stock to live in those areas has been a prime reason for the decline in the production.

I think a few words of clarification might be helpful on this matter of pollution and its effect on marketing of shellfish.

The standards under the sanitary system that was set up in 1925 required virtually that shellfish for consumption must be taken from waters having a bacteriological quality comparable to drinking water. And I might say that under this program -- and it's a voluntary shellfish program started in 1925, and I was in there at that time -- it has been a cooperative program between industry, States, and Federal Government, formerly under the United States Public Health Service and now under Food and Drug -- under that system that has been in effect over 50 years, if my information is correct, and I believe it is, there has not been a single case of disease from oysters produced under this program by certified dealers.

A person can be perfectly safe if you are eating shellfish that are produced under this system and the dealer or restaurant that has them has the tag, the split tag, half of the split tag that goes with it showing its origin.

This has been a remarkably successful program.

MR. STEIN: Mr. Nelson, I'm not disputing your statement, but when I -- or the average man -- eats an oyster, how do I know it comes from a certified dealer?

MR. NELSON: Correct. Your question is good, Mr. Stein. And I would say that you could inquire of your restaurant or place that you ate as to the source. But I don't think that that is enough. And as businessmen we are currently working on and have been for more than a year a method by which we can mark each individual oyster, maybe not quite like the sticker that is on the bananas, but we have been experimenting with various devices that would put a marker on the shell as the oyster passed under this apparatus so that after -- or before if you like -- you turn the shell over and look at the mark and you say, "Well, this came from Long Island Oyster Farms. It's safe."

This I feel is a very real thing. And I don't take the suggestion lightly. We feel that this is an extremely important matter.

The history of the Rocky Mountains shows the oyster has been around since the Rocky Mountains were under water, which I guess was back in the days of Macedonians, and the oyster has been able to survive ever since. But the question is whether -- unless this pollution situation is reversed in our estuaries -- it can continue to exist.

I think it's very, very heartening that we have these activities. It has come with great support and popularity, as we can see by the people who are attending, and it is very heartening indeed.

MR. STEIN: Thank you.

Mr. Nelson, I don't think some of us who have worked with the oyster industry have any doubt of the oyster's ability to exist. Our question is with pollution whether the oyster and man have the ability to coexist.

MR. NELSON: I think that's a very good point. We transplant practically all of the oysters that we operate in Connecticut and New York waters. Our seed is largely produced in Connecticut but we are transplanting practically all of our production to eastern Long Island waters where the bacteriological quality of the water, like drinking water, is acceptable.

We have been marketing a few from the Thimble Islands area which is open in the winter months when people aren't on the islands. We are questioning whether we are even going to continue to try to produce market oysters in that area.

MR. STEIN: Let me ask you this. Again I haven't been as close to this field for the past 15 or 20 years on the marketing conditions as I guess I would like to be. I always liked working with you people. But do I understand what you are saying is that up in these areas you are largely producing seed oysters and getting them to other waters to grow them?

MR. NELSON: Yes.

MR. STEIN: In other words, the conditions of the waters you are operating in are such that if you produce the oysters in those waters to maturity, the quality of the waters would not permit you to ship them in interstate commerce? Therefore, you ship the seed oysters to other places?

MR. NELSON: This is largely true. It is true of the oysters grown in the estuaries. We have plantings out in deep water in Long Island Sound where the quality of the water is acceptable, but the depth of the water is such that the food conditions are not proper for production of suitable meats. For that reason we transplant over to other areas, where they fatten better.

MR. STEIN: Thank you.

Are there any other comments or questions?

(No response.)

If not, thank you very much.

If you want to come up, come on up.

DR. BENOIT: I'd like to ask Mr. Nelson how I might be able to determine in a restaurant whether a piece of sausage that I am eating was made with government-inspected pork.

MR. STEIN: Well, let me tell you. When you get a piece of sausage in a restaurant, if you eat it raw, as I suspect you don't, Doctor, you probably proceed at your own peril. But the trick we have with oysters and clams is we eat them raw, alimentary canal and digestive system and all.

There are very few animals that we eat that way.

That's why we have the high degree of protection for oysters and clams. This is the problem. We have always had it. I know of nothing else within our American society that we consume that way. That's why we have to be super-careful.

If you want to answer further, go ahead.

MR. NELSON: No, I have no other comment.

MR. STEIN: You know, we have been in this business a long time. Most of us grew up on it.

MR. NELSON: I have no knowledge of sausage.

(Laughter)

MR. STEIN: Are there any other comments or questions?

(No response.)

Mr. Curry.

MR. CURRY: We have a representative of the Greenwich Environmental Action Group who would like to say a few words.

STATEMENT OF

FRANK SINGLETON

DIRECTOR OF ENVIRONMENTAL HEALTH

TOWN OF GREENWICH, CONNECTICUT

MR. SINGLETON: My name is Frank Singleton, Director of Environmental Health, town of Greenwich. I run an environmental health program there. We are the dividing line between New York State and Connecticut. So I think it's time we went down to reality a little and talked about the local level. We're where the actual action usually takes place.

First of all, let me comment that I am also speaking for the Greenwich Environmental Action Group and the Byram River Pollution Abatement Society. They hoped to be here today but they couldn't make it.

I want to speak on a number of issues. Before I do though, I would like to answer some of your questions perhaps regarding research needs. I think there are two that are very interesting.

One is the fact that metals in Long Island Sound apparently are more extensive as a pollutant than we recognized. One of them is, for example, cooling waters from powerplants often have metals added to prevent fouling inside the machinery.

MR. STEIN: What?

MR. SINGLETON: There are metals sometimes added such as copper or chlorine, for that matter, to prevent fouling.

MR. STEIN: Slimicides. They generally add chlorine. Are they really adding metals?

MR. SINGLETON: Sometimes metals as I understand it. We are dealing with a powerplant that may come in in Stamford so we have been concerned with that. That's a research need. But now with the millions of gallons a day of cooling water that goes through some of these powerplants, there may be a large amount of metals generated.

MR. STEIN: That's right. We are generally asking that no chemicals or metals, slimicides be used in the cooling plants. I don't know how far we're getting with that, but we are proposing that.

MR. SINGLETON: Well, at the moment, as far as I know, they are being used.

Secondly, there was a study done in Massachusetts recently about marine fouling tanks that contain mercury, and it showed, in parts of Cape Cod, sediments approached 900 ppm of mercury. These were close to marine boating areas in which boats were cleaned. The paint chips were washed off.

However, this is not a shellfish problem. Since usually the harbors are so fouled with the usual activities of boat yards you'd get parts per million as high as 3, 4, 5, or 6 in oysters and clams that exist, but these were not shellfish harvesting areas. I have the papers if you want them. They are from the Massachusetts Department of Health.

So Kadie Anders came up from the New York Times.

It's reaching rather high concentrations in some of our shellfish by biological measurements, and apparently metals in Long Island Sound may be a very significant research problem. And every time we turn around we are falling over it. As a local health department involved with this, I am beginning to find out I am getting really frightened about some of the research results that have been coming in, but it hasn't been put together or correlated nor an inventory made of Long Island Sound. I can show you --

MR. STEIN: Let me ask you one question. I just ask you this to try to put this in perspective. Do you think you have any special problems in the waters, metal problems in the waters, of Long Island Sound that we don't have in the other waters of the country?

MR. SINGLETON: I can't answer that, not being familiar with the other waters of the country. But I suspect that you do have a more serious problem due to the limited shall we say capacity of the basin here compared to let's say open ocean.

However, it may be more serious in something like the Great Lakes.

But in some of your test results which are in the back of your book there I can show you where Stamford Harbor is and where Port Chester Harbor is by the metal content. Greenwich in between shows none.

So the only point I'm trying to bring up here is that mercury was sort of stumbled across a few years ago almost by accident, and we may have a problem in Long Island Sound with metals that not enough research has been done to determine.

This is a real buildup in the lower part of the sound. It has been characterized actually, the western end of the sound, as a toilet bowl that doesn't quite flush. This is really I believe a point that is a serious point.

I think there is a need for some research on what are the concentrations of metals in the lower part of Long Island Sound specifically, but in general in Long Island Sound, especially as related to powerplants.

Now, this brings in a couple of other items. First of all, let me mention a few of my local problems as related to this conference.

One is the fact that at Stamford Helco wishes to build an 800-megawatt powerplant. This will create quite a bit of a problem with thermal pollution. You have, of course, a great deal of cooling water being brought in. There may be slimicides put in. We don't know yet.

They want to offshore load. They will be burning over a million gallons of bunker C oil a day. They plan to come in with tankers on this I think.

I think there should be a moratorium on construction of powerplants in the western end of Long Island Sound until the oil pollution problem can be pretty well clarified, whether it be by pipeline, whether it be by the Coast Guard providing specific navigational aids, or what have you.

But Helco right now is moving rather rapidly to construct this plant or try to get it going. And if you sit there for the next two years and think about it, it will already be built or well on its way.

I think that there needs to be a decision made by this agency in the next few weeks on the powerplant problem especially in the western end of the sound. I don't think it can be delayed any further.

MR. STEIN: What plant are you talking about?

MR. SINGLETON: Stamford. Right now there is a powerplant that already exists. I think it's 47 megawatts. Helco has come in and would like to build-- It's not in your list in there.

MR. STEIN: You mean this is an added starter?

MR. SINGLETON: They want to tear it down. They want to put an 800-megawatt plant where the existing plant is.

MR. STEIN: Fossil fuel?

MR. SINGLETON: Fossil fuel. Bunker C.

MR. STEIN: What's your complaint about that plant?

MR. SINGLETON: First of all, excluding the air problem, we have a problem where first of all they want to offshore load, like they do in Northport off Greenwich Point. Invariably there will be an oil spill. The oil technique, as you well know, is not sufficient to control oil spills on open waters. It's bad enough in enclosed harbors. It's putrid in open waters. You can't control oil that is spilled of any magnitude at all, especially in an open sea.

You're going to have tankers coming in at least once every two to three weeks. This plant will burn at least a million gallons of oil a day. This is the western end of the sound.

We have had since I have been in Greenwich in the last several months six oil spills of greater or lesser magnitude. The Coast Guard and I are getting very friendly because of this problem. These have only been 100 or 200 gallons, and they are bad enough. I can imagine what it would do to Greenwich's major recreational point if there was a major oil spill of bunker C.

MR. STEIN: Let me just check the facts to be sure I heard you right.

MR. SINGLETON: Sure.

MR. STEIN: You said 800 --

MR. SINGLETON: Megawatts. That is what they anticipate they would like to build.

MR. STEIN: On fossil fuel?

MR. SINGLETON: On fossil fuel. Correct.

MR. STEIN: You know, the largest plant we listed on fossil fuel is 479 megawatts.

MR. SINGLETON: I know that. Yes.

MR. STEIN: Generally speaking, when they go that high these days, they go to nuclear power.

MR. SINGLETON: They can't because AEC won't let them. The population density is too heavy. They would like to go to atomic power. They have told us they regret going to fossil fuel. I mean they would prefer atomic power. But the AEC has told them it's too close to New York City.

This is in direct conversations with the people at Helco. This is not by hearsay or even by telephone. This is face-to-face communication.

MR. STEIN: We're taking what you say, but you know they do have some nuclear plants around Chicago.

MR. SINGLETON: I agree. Apparently this is a fairly recent Federal decision by the AEC.

MR. STEIN: All right.

MR. SINGLETON: But that's not my jurisdiction.

MR. STEIN: All right. By the way, I'm not questioning you. I just wanted to ascertain the facts when you gave the megawatt loading.

MR. SINGLETON: Right.

MR. STEIN: When you mentioned fossil fuel I wanted to be sure I understood you correctly.

MR. SINGLETON: Correct.

MR. STEIN: Go ahead.

MR. SINGLETON: Our problem, as I say, has been we would like to see a moratorium until some of this gets clarified specifically from the point of view of oil and specifically from the point of view of the thermal pollution and the cooling water.

I first of all am against any once-through cooling. I think now it's cheap and that's the only advantage you have.

Okay. Let's go to Port Chester. Mr. Glenn is very familiar with the problem in Port Chester. It is a sewage treatment plant --

MR. STEIN: Wait. I don't understand you.

MR. SINGLETON: I'm giving you --

MR. STEIN: Let me see. I don't understand what you're saying. Would you be in favor of the 800-megawatt plant --

MR. SINGLETON: No.

MR. STEIN: -- in your community if they had cooling towers or a closed system because of the oil problem?

MR. SINGLETON: Our main concern-- Now, this air pollution I'm going to avoid. Let's go on to just the water. The oil is what we are really most concerned with.

MR. STEIN: In other words, you don't want them in your community at all, no matter what they do about thermal pollution?

MR. SINGLETON: No, sir.

MR. STEIN: Is that correct?

MR. SINGLETON: We want to see better protection. However, at the moment we have not received any hard guarantees-- First of all, I think offshore loading would be a disaster in this highly populated area, because I don't see how when an oil spill takes place-- And if you bring in tankers every two or three weeks and you do this for three or four years, sooner or later there will be human error.

MR. STEIN: I'm just trying to find out what you're driving at.

MR. SINGLETON: I'm driving at --

MR. STEIN: Are there any conditions under which you would accept the 800-megawatt plant? Suppose they did not have offshore oil loading. Suppose they had a closed system and they didn't have once-through cooling. Would that plant be acceptable in Greenwich?

MR. SINGLETON: All other things being equal, yes.

MR. STEIN: All right. Thank you.

MR. SINGLETON: What we're pointing out is they are planning to build now, and I'm not sure we are going to get these guarantees.

MR. STEIN: All right. I just wanted to see what you had in mind.

MR. SINGLETON: Okay. A second problem is that in both our end of the sound, if you will, the Connecticut end, and in the New York end the majority of sewage treatment plants are primary. Specifically, Port Chester in New York State has a plant that at times has been so bad in its performance that the effluent has been worse than the influent in terms of BOD removal and suspended solids.

MR. STEIN: That's not unusual that the effluent is worse than the influent, is it?

MR. SINGLETON: That's one of my points.

MR. STEIN: That's the story of our life in pollution.

MR. SINGLETON: That's right. My only point in this is that before we talk about tertiary treatment, why don't we get secondary treatment?

Americans have a tendency to jump 20 years in the future. I'd like to talk about the present. And I do feel that all sewage plants in the whole Long Island Sound area and especially the western end should be secondary treatment and this should start immediately and not sit around and study it the next three or four years.

The third point is jurisdictional matters. Now, let me give you who I have to deal with over something as simple as the Byram River, which is a small interstate river that divides New York from Connecticut, which is heavily polluted by the American Felt Company of General Aniline and Film, and a number of other things, including Port Chester.

I have to deal with everybody at this table, and I won't go through it all. I have to deal with the Health Department of the State of Connecticut, the Health Department of New York State, the Coast Guard, the Corps of Engineers, and the Attorney General.

If that is the case with the jurisdictional problems in just the simple matter of getting something done on a small river basin, I really feel sorry for you with the Mississippi and the Hudson because I can imagine the problems.

But I think we need better communication between the various Federal, State, and local agencies on this matter.

One point I'd like to mention here is that the local government very rarely gets notified by any of these agencies, including the Federal Government, about meetings such as this. I usually find out about these meetings through conservation groups.

MR. STEIN: If you read the law, I think the law is plain on this. This is the meaning of the Federal and State agencies. The States are supposed to notify you. The fact that the Federal Government doesn't notify you is a question not only of design but it's because we're following the law.

MR. SINGLETON: Right. I'm just stating --

MR. STEIN: I'm really suggesting this because we get it very often. The point is if you have another approach to this where you feel you want to deal with the Federal Government rather than the State -- and I'm not sure I recommend it because if you begin dealing with us Federal scoundrels you'd find how nice a guy Jack Curry really was all the time -- (laughter) -- the forum for this is probably the Congress.

What we are trying to do is follow the Federal law which deals with the primary rights and responsibilities of the States. We notify the States, and they are supposed to notify you.

MR. SINGLETON: Fine. I'm just pointing out there have oftentimes been deficiencies in communication. I'm not really trying to make a big point about it. It's merely that there are so many agencies involved that oftentimes something that is important falls between two agencies and disappears.

One other point then I would like to mention is that we would like to clarify and hopefully at the Federal level the implementation time needed for this permit system. I'm not sure this is the forum for it.

But we have had an argument with GAF about a discharge. We have had a problem with it because it is a pollutant on the Byram River. It's the single most serious pollution in there. We have gone to the Attorney General. We have been fighting back and forth with the Corps of Engineers on this.

But one of the problems will be if they apply for a permit can we take them or can we refer them to the Attorney General? Do we have to wait until the Federal Government with its limited manpower spends the next six months, a year, etc.?

MR. STEIN: Let me help you out on this.

MR. SINGLETON: Okay.

MR. STEIN: It just happens to be the right forum for this.

MR. SINGLETON: Okay. Good.

MR. STEIN: Where is this? In Connecticut or in New York?

MR. SINGLETON: In Connecticut. There is a plant owned by General Aniline and Film, formerly titled the American Felt Company, which discharges 300,000 gallons of industrial waste.

MR. STEIN: It belongs to GAF now?

MR. SINGLETON: GAF. Yes. Industrial waste. Mr. Curry has it under order, etc. There is a regular procedure. However, we feel we have a lot of problems that we have been trying to deal with with Mr. Curry's agency, with the Federal Government in general, with the Corps of Engineers.

One of the problems has been, see, they want to tie into our municipal secondary sewage treatment plant. We would just as soon not have them in there until we have some questions answered which we don't feel have been answered yet.

However, at the moment the problem is that we have them legally and I think we can press the issue farther if we can get the Attorney General to move. However, if a permit system gets implemented and they apply for it, then we feel probably no court in the land obviously would go and, let's say, blame GAF for, you know, waiting for the Federal Government to act.

I have asked Mr. Ruckelshaus this recently in Boston. I have read his letter in the New York Times. He never does answer how long will it take to make an inventory of these permits -- the bureaucratic delay, in other words.

MR. STEIN: You're right with the bureaucratic guy who makes the decision here right now on these permits.

MR. SINGLETON: Okay.

MR. STEIN: You have the most vexing problem whether you're going to take them into your city system or not.

MR. SINGLETON: Right.

MR. STEIN: Now, you make up your mind whether you are going to include them or not. And if you are going to include them, great. We'll give you a time schedule, and you include them. If you're not going to include them, you work with Mr. Curry. He'll get in touch with the Federal people and we'll talk to GAF, who are not entire strangers to us, as you might guess, and I think we can expedite this very rapidly.

But I suggest to you that the basic decision is going to be yours -- whether you are going to take them into your municipal system or not. And you're going to have to give us the answer.

MR. SINGLETON: I agree.

MR. STEIN: But once you do that, we will move on that very rapidly.

MR. SINGLETON: Okay. But I want to clarify that one of the problems was until -- Originally they were going to go into the municipal system. This is something that was decided by Water Resources and GAF with the town. We have sort of thrown a wrench in those gears until we get some more information.

But all we're worried about now on the specific question is: Would the permit system being implemented for industrial discharges slow down or interfere with any legal action if they decide not to go into the municipal system?

MR. STEIN: I can answer that. The answer is no. But this is the question that we're going to have to face, because I think this in microcosm probably will give you the kind of complexity of problems we have.

The point is I don't think I would -- and even if I did, I don't think a Federal judge would support me -- ask GAF to spend millions of dollars on the cleanup if all they were going to do to handle their waste in a few months was to make a connection to Greenwich's municipal system.

So you have to make up your mind with the company one way or another. And you set a date with Mr. Curry. And, by the way, if you call this to our attention, we're very charming people, and if you don't set the date we'll set it for you where you are going to make up your mind whether you are going to take them into the municipal system or not. This is the key question.

Then, if you are, you are responsible technically and legally for handling their refuse, their wastes. If you're not, then we will deal with GAF.

By the way, I think GAF is, from my indications, a reasonably responsible corporate citizen. I don't anticipate having any problems with them if we get that answer.

But as long as you can be whipsawed about whether you're going to take them in your municipal system or not -- talk about tax refuges -- this is one of the refuges of industrial dischargers. And until we can get a straight answer in the municipality, they can go behind this. So you have to face up to your responsibilities too.

MR. SINGLETON: Not to drag it out, but I want to say one thing I don't think I made clear. Decision was made to tie into this municipal system. We stopped it. The date that was supposed to tie in just passed -- March 31st.

Now, the decision has to be made all over again with Water Resources and the local sewer division and myself, of course.

So what I'm saying is that the decision originally was made based on a Metcalf and Eddy report that we decided was not sufficient to answer or to protect the town. So it's up in the air.

But GAF, while they're cooperative and they're lovely people, I agree, are not famous either for moving rather quickly unless prodded with a bayonet. So I mean the whole --

MR. STEIN: No one is going to be --

MR. SINGLETON: Right.

MR. STEIN: No one is going to move rather quickly. This is the point.

By the way, I have no complaint in these cases against these industries, because the industries were within the morality of American industry, and if cities are going to come up with this indecision when they are on and off about whether they are going to take an industry into their system or not into their system, don't point to the States and the Federal Government to solve your problem --

MR. SINGLETON: We're not.

MR. STEIN: -- because we can't until we get a definite answer from you people.

I would say if you look at the unresolved cases and the cases missing a deadline in most of the industrialized

States, that we have on our books, you'd be surprised at the high number -- maybe it's as much as 20 percent -- of cases that are hanging fire just because there hasn't been a resolution of whether they are going into a municipal system or not, or when they decided to go into the municipal system the municipality hasn't extended the sewer so they can connect.

I think you just are going to have to face up to your obligations before we can all work together on this and have an answer to it.

MR. SINGLETON: I agree. When it is done, all I want to say is we don't have any further delays by a permit implementation system.

MR. STEIN: You're not going to get any delays from that.

MR. SINGLETON: Can I hold you to that?

MR. KLASHMAN: Mr. Singleton, you're here as the Director of Environmental Health of Greenwich?

MR. SINGLETON: Yes.

MR. KLASHMAN: Are you also representing the mayor?

MR. SINGLETON: There is a selectman, not a mayor, and I'm not representing him.

MR. KLASHMAN: Are you here for the city?

MR. SINGLETON: I'm here for the city. I also am here to speak for two of the local groups.

MR. KLASHMAN: What concerns me is in the implementation schedule I understand that Greenwich was supposed to build an interceptor, and the date for that is behind schedule now.

MR. SINGLETON: Due to a funding problem plus certain bureaucratic procedures, yes, sir.

MR. KLASHMAN: So the question --

MR. STEIN: I never heard that before. That kind of reason is completely unfamiliar to me. (Laughter)

MR. SINGLETON: Is it? Well, by the way, I want to clarify something before we go on. I'm not responsible for the sewer plant or the system. That is the Sewer Division of the Department of Public Works. What I am responsible for is the problem that may be created if the sewer plant in the lower harbor, a secondary plant, gets damaged by industrial waste creating a sanitary condition in the lower harbor.

Also I'm responsible for the water quality in the Byram River which is affected by this plant.

But I was not responsible nor am I in the direct line of getting that sewer up there or tying that plant in. I can have a negative veto, but I can't agree to let it in. That's not my job. I mean my point was --

MR. STEIN: I'm glad we went through with this, Mr. Singleton. Because I think the story that you have heard with Mr. Singleton is a very typical situation that we have in pollution control. When you talk about someone being in noncompliance or anything of this sort, when you begin getting down to the facts of the case, you always get into a complex situation like that.

You know, when you say that the problem is lack of funds or bureaucracy, I agree with what Mr. Singleton says, but I think we have to apply both those things, lack of funds and bureaucracy, to all levels of government --

MR. SINGLETON: Agreed.

MR. STEIN: -- namely, Federal, State, local -- and go beyond the levels of government to industry, --

MR. SINGLETON: Corporate.

MR. STEIN: -- because they have the same problems.

MR. SINGLETON: Agreed.

MR. STEIN: But this is what we have to cut through in order to get pollution control lined up.

Thank you very much.

MR. METZLER: Through the courtesy of my colleague from Connecticut, I have been granted the privilege of putting on a witness from New York who has to go back tonight -- Mrs. Claire Stern, who is Executive Director of the Long Island Environmental Council, from Roslyn.

If Mrs. Stern will come forward, we will be ready for her statement at this time.

STATEMENT OF
MRS. CLAIRE STERN
EXECUTIVE DIRECTOR
LONG ISLAND ENVIRONMENTAL COUNCIL
ROSLYN, NEW YORK

MRS. STERN: You're all tired and weary, as I am, so let me briskly read my statement directly.

The Long Island Environmental Council is a coalition of 63 organizations. For those men who can see my statement, you can see it said yesterday 62. It is crossed out to say 63 because yesterday afternoon the Presbytery of the Protestant Church of Long Island became the 63rd member of our organization.

We represent differing individual agendas, as you can tell from my comment to you about the Protestant Church, and individual memberships, all working together under one administrative structure in defense of the environment, especially the quality of life on Long Island.

In aggregate, we represent the general attitudes of well over 20,000 members, but I speak today for the Board of Directors of the Council. I am Claire Stern, the Executive Director. The aims of the organization are public education and citizen action. One goes with the other, of course.

Since the Council was organized just over two years ago, we have identified water quality and water resources as a priority goal. We have implemented this goal in a variety of ways:

-- participating in the Citizens' Crusade for Clean Water, which was a national coalition;

-- successfully stopping an application to the Corps of Engineers to dredge 5 million cubic yards of fill off the western coast of Great Neck;

-- cooperating with local conservation groups to save acres of marshland in a variety of places;

-- actively campaigning to enforce the New York State boat holding tank law;

-- supporting the detergent ban in Suffolk County, and cooperating with all public agencies to enforce the ban;

-- initiating a consumer boycott in Nassau County toward the use of soap and no-phosphate detergent;

-- supporting legislative proposals for a single governmental authority to protect, preserve, and develop the Long Island Sound. For this purpose we cooperated with other organizations to form a communications network of citizen organizations around the sound, called the Long Island Sound Association;

-- testified at the Ribicoff, Wolff hearings, July 1970, on proposed legislation;

-- opposed the construction and still oppose the construction of the Oyster Bay-Rye Bridge;

-- testified at public hearings, conferences, etc., to consider applications for use of the shoreline -- most notably (1) against the proposed desulfurization plant in Suffolk County, which, by the way, is now up in Maine looking for a piece of the shoreline, and (2) against the request of the town of North Hempstead to place incinerator residue on 26 acres of the shore of Hempstead Harbor; and

-- attended quarterly meetings of the New England River Basins Commission which has been discussing the study of the sound.

This enumeration should give you, the conferees, an estimate of the interest and commitment of the Long Island Environmental Council in the proceedings and possible results of this enforcement conference being held here in New Haven.

I hesitated to add another phrase after "being held" as I was typing this, because, in truth, after a total of many manhours of conversation, reading, and research, I still do not know why this conference is being held. Until Monday night, it seemed to me to be a giant press conference to release a much-heralded report which would list the polluters who are guilty of degrading the waters and embayments of the sound and to establish a schedule of enforcement proceedings.

It appears to be, in addition, an opportunity for each public official to state the progress and needs of his own individual jurisdiction. We were not to be outdone. As you heard, we started off our statement in the same fashion.

Identification of the private, municipal, Federal, and industrial polluters is a necessary data gathering device prior to action. Even a determined reader of the report cannot tell where the blame should be placed. Mr. Curry has carefully enumerated how he feels on behalf of Connecticut.

I can tell from looking through carefully for those areas on Long Island that I know well that it just did not jibe. It looked to me like it was a first draft of a report yet to be put together.

The charts are incomprehensible to me. Poor little Rowayton Market was listed in the same place with Raybestos-Manhattan. We cannot tell from the chart or text if the 48 industries which have completed their federally approved schedules are no longer polluting the sound, or must they now start on another schedule? We hope the EPA staff has this information. We hope they know exactly what polluting elements are being sent off with the wastewaters. Clearly we, the citizens, do not know from the information provided.

You might say, then, that's all right, that the State and Federal agencies know and will proceed toward enforcement. My answer to that hypothetical remark is twofold:

One, if we could depend on your vigilance, gentlemen, we would be relieved of the constant worry as we watch our beaches closed and our shellfish beds being closed, in spite of all the conversation today about how many are being opened.

But while we have relied on our elected and public officials, we have seen a continuous flow of language lamenting the deterioration of our waters and very little to encourage us that the trend is truly being reversed.

My second comment on this hypothetical conversation is that every piece of legislation builds in the opportunity for citizen involvement. Hearings are mandated in locales to be affected by the proposed project. The Nassau County Health Department, for example, wrote a new brochure in fall 1970 urging the citizen on to play "a vital role in reducing and controlling water pollution," but refuses to give us information on locations of wells or the data on a particular harbor that we were seeking.

This conference today was called with the cheery encouragement to conservation groups and citizens. But I could not receive a copy of the important report until today, when presumably I would be so confused by the presentation of the data that all I would be able to do would be to say "we are here and we care."

Since the report was made available to municipalities, congressmen, and industries, I cannot see why the two Long Island daily papers were the only ones able to print the news about the report and the conference and why the Long Island Environmental Council, known for its continued, responsive interest, could not also have been given the courtesy beforehand.

Now, having expressed our competence as an organization, our interest, and our desire to see this enforcement conference be the beginning of a real effort to clean up the waters of the sound, I wish to review and comment on the recommendations of the report, page viii, and add a few of my own which were not included and which I believe should have been.

Enforcement

1. We wholeheartedly concur with this recommendation. We hope you have the necessary data to proceed immediately. We would wish to know about the progress being made, which industries and which municipalities are being selected, and which enforcement procedure is being adopted. We recommend that your ability to "select" be removed from the law, so that no pressure of any kind can be brought to bear on any public official to delay prosecution.

Thank you, Mr. Stein.

MR. STEIN: Thank you.

MRS. STERN: 2. We agree, and I am fairly sure that recommending waste treatment plants is like singing the praises of Mother Nature. This takes a commitment of dollars from the Federal Government which we have not yet seen.

You will all recall how hard we had to work to raise the $214 million in 1969 for water pollution abatement to the final $800 million, knowing all the while how inadequate this billion dollars would be that we were fighting for.

We need money for construction grants and money for research to hasten us toward the time the local officials can no longer say, "We cannot commit tax dollars, Mrs. Stern, to pilot projects."

At that rate, we will not see phosphate and nitrate removal in the densely-populated metropolitan areas in my lifetime.

In a report of the U. S. Department of the Interior, March 1970, "The Economics of Clean Water," a helpful point was made -- that the priority system of directing funds to the most useful projects has been ineffective, because "willingness of the community to proceed with a project is the operative allocation mechanism."

Greater Federal funding, as originally conceived, is a more equitable use of the tax dollar and would insure greater quality control on all projects.

I would recommend, further, that the municipality be required to post a performance bond or use some other workable,enforceable agreement prior to receiving Federal subsidies, as was suggested in the Nader report released on Monday of this week.

3. I am surprised at this suggestion -- although perhaps I really did misread it -- that EPA suggests by highlighting it as a recommendation that disinfecting is acceptable and that it does not say that such discharge should be closed down as quickly as possible, which would make more sense to me. But again I say perhaps I misunderstood

that recommendation.

4 and 5. These to me appear to be jurisdictional, and I got that feeling from Mr. Curry's comments.

6. Every agency wants to develop a water management program for the sound -- the Corps of Engineers, the New England River Basins Commission, the Interstate Sanitation Commission, the Tri-State Transportation Commission, the Nassau-Suffolk Regional Planning Board, and, of course, the Environmental Protection Agency. Each agency has wanted to be funded for this study for several years, according to my records.

Having stated this desire as a truism of water management, each agency and municipality continues to do business in the same old way. Hence, the list of environmental skirmishes between citizen groups such as ours and the agencies or industry grows in number and intensity, with great costs of time and money for both sides of the fight.

We have no choice. We have no plan. Each power company proposal, each incinerator, each dredging application, each housing subdivision -- you name it -- must become an adversary situation.

Don't talk about planning. Please do it. And remember further that we will not accept planning as a substitute for the kind of action needed on enforcement that we are talking about here today.

7. How can you stop using the spoil sites as recommended? First of all, you really do not know what effect the spoil has on the sound. Nor can you be sure there won't be equal damage on land, assuming you could find land to use, which on Long Island is not really possible.

Why not be more selective, at least -- and since I wrote this before this morning's colloquy, I still point out that I was saying then -- why not be more selective, at least, and find out if the dumping of pharmaceuticals by Pfizer at The Race is being carried westerly? Why not close down the spoil sites close to shorelines? Why not fund an onsite inspection program? For no one really knows if the skipper takes his spoil to the spot designated on the Corps' permit.

Now I'm going to skip to No. 9 in the recommendations. I ask the staff of EPA why they picked on Connecticut to install pumpout stations and why you did not remind New York State, which has a law mandating boat toilets, to also mandate pumpout facilities. We are indeed happy that compliance is announced by New York. But we are not yet witness to performance.

You might be interested to know that as a result of conversations through the Long Island Sound Association

Senator Edward Rimer, of Wilton, Connecticut, introduced a mandatory bill into the Connecticut Legislature this session.

I will conclude my statement by touching on a few recommendations not referred to in the report at all and which we wish you would take under advisement.

1. Ban phosphate detergents. Encourage the industry throughout the Nation to move quickly to find a reasonable substitute. Encourage the States to move individually, as quickly as possible. New York has three bills now which relate to detergents which we hope to see passed which will ban detergents with phosphates over 8 percent (we, of course, would like to consider banning them completely, and we are still doing some research on this), encourage research into substitute washing powders (this is the second bill), and, third, set a target date for the complete ban in New York State.

2. We recommend that EPA concern itself in greater detail, immediately, with the siting of powerplants, conventional and nuclear. Governor Rockefeller introduced a bill yesterday which would place this decision-making power in the hands of the Public Service Commission of New York, an agency not especially well known for its environmental concerns.

3. My last recommendation is that a fund be

established for aiding industries which are vital to the Nation's production capability but who would be under severe financial difficulties if forced into a schedule of upgrading their operation. A report prepared by a consulting firm from Cambridge, Massachusetts in 1967 for the Department of the Interior suggests criteria to be used for granting those dollars.

Mr. Metzler, thank you very much for giving me the chance to speak today. Thank you very much for the chance to be here.

MR. STEIN: Thank you, Mrs. Stern.

Are there any comments or questions?

MR. METZLER: I merely want to thank Mrs. Stern and the agency she represents for their concern about the environment. Some of these groups that she represents have demonstrated their willingness to get out and work for bond issues and to help change things. This is the name of the game. So we appreciate that.

We will take note of some of your comments for improving the program that we now have going, specifically on the boat pollution.

I think it might be at least of interest to explain the decision-making process. There are two schools of thought. One is that you mandate pumpout facilities. Several States have gone this route. The marina operators have insisted that if we will enforce the law they will provide the facilities.

Now, frankly, they didn't last year, but we didn't enforce the law either. And so this year we think everything is set for strict, hard enforcement, and we'll have an opportunity to see. If the evidence is that they simply don't provide enough facilities, then I don't think we will have any choice but to go back to the New York Legislature next year and mandate pumpout facilities.

One other point. The State of New York has quite a number of State-owned marinas, and the legislature in 1969 appropriated money so that we do have pumpout facilities at the New York marinas.

MRS. STERN: May I comment?

MR. METZLER: Please do.

MRS. STERN: Unfortunately, not many of those are down on Long Island. That's the point I want to make. Because I'm in touch with the boat owners and many of the operators. The feeling has been very clearly that, one, the State of New York did not provide the pumpout facilities where it might have been doing so in the land where it has ownership. Okay. So that you did not at least show the way.

The second point to be made: The men who own boats, whether it is for recreational reasons or for commercial fishing, I find love Long Island Sound in a way that perhaps the rest of us don't. They live out on it. They have a kind of an emotional relationship with it. They are more offended by the degradation of the western part of the sound than many of the rest of us do.

We somehow make accommodation. They do not. They are the ones who are saying, "We're very happy to comply with the law, but we expect everybody to comply with the law. We expect the government facilities to be provided. We expect the government-owned boats to have holding tanks on them. And we also would like very much, please, if Connecticut, which is just across the way, would be doing the same thing" -- which is why we attempted to provide this service, and we talked to some people in Connecticut when this bill was introduced in the Connecticut Legislature.

The other part, which is really a third point that needs to be made, is we have been this route and I have gotten very many nasty letters from some irate boat owners who have said, you know, "Really we're the smallest part of the whole thing. Why aren't you really after the big guys?"

And we have to show them together. You know, I say "together" because I'm here representing their point of view, and I am hopeful that it will have some effect upon what all of you decide tonight or tomorrow or whenever it is you're going to set your schedules.

You really have to start going after the large polluters. You must start doing this immediately, and you must announce it. We can't have a report like we had from EPA today which doesn't give any indication at all about the changes that have taken place. You can't tell from that list whether someone has upgraded sufficiently, as you indicate in New York State's report, that a given installation has been upgraded and is no longer cited as a polluter.

What's the point of having a report such as the one that I have if I can't go to the Roslyn Village and say, "Good people, you know you have done yours, and now we go to the next and we try to persuade Port Jeff to come up to par."

This is the kind of thing that is terribly important.

But I went off the original point, which is the boat toilet thing, and the detergent ban, which for some strange reason have caught the imagination of the sort of everyday citizen who finds that worrying about nuclear powerplants, you know, all around Long Island Sound or all of the sewage wastes coming out of the western part of the sound is really more than he can tolerate. They can't do anything about it. All they can do is maybe write an angry letter to somebody.

That's your job. That's the way they feel. But their job is to do these small things that we are talking about, which is to put a holding tank in, and they are perfectly willing to do this, but you, the State, have to give them the lead.

MR. STEIN: Mr. Glenn.

MR. GLENN: Just one thing. I'd like to correct a false impression that you might have here. I don't want to have all these people elbowing me in this race for this management study on Long Island Sound and elbowing me unnecessarily.

I'm not in that race. And I'm very much in favor of the New England River Basins Commission making this study. We'll be glad to give what input we can for our end of the sound that we have.

And I'll assure you we won't even be out there in line with our hand out with all that large crowd that will be knocking on Mr. Gregg's door.

MRS. STERN: I'll cross you off my list here. All right? Is there anyone else? Shall I add somebody I forgot? I mean there are so many. (Laughter)

MR. GLENN: I didn't want people taking pot shots at me and not having a reason.

MRS. STERN: Mr. Glenn, we certainly won't do it for that I assure you.

MR. GREGG: Murray, may I ask --

MR. STEIN: Yes, Mr. Gregg.

MR. GREGG: Mrs. Stern, you said on the last page of your statement, "We recommend that EPA concern itself in greater detail, immediately, with the siting of powerplants." There were several comments on this today, a couple calling for moratoriums. It wasn't clear under what authority moratorium might be applied.

Were you thinking here about intensive studies to determine the potential effect of thermal plants on the sound? Or are you talking about a moratorium? Or what are you talking about?

MRS. STERN: What I really was talking about was the most intensive study possible. We cannot, you know, continue to have this kind of confrontation that says, you know, we put on all the lights and then we tell the power company they can't build a plant anywhere of any kind.

I think we do think that in terms of nuclear power at this time we do ask for moratorium. We have taken this position.

But we want very much to have a study made, and we believe it can be made. We hope that it can be made very quickly. Otherwise we are going to have things such as the hearing out on the Shoreham plant that are going to go on forever. We can't afford that. None of us can.

MR. STEIN: I'm trying to understand this. You mean a moratorium and that they don't build any powerplant even with all safeguards? Let's assume that you had all the safeguards you wanted. You wouldn't want any plants at all?

MRS. STERN: Mr. Stein, maybe it's my lack of knowledge, but isn't it possible that for one year all applications could be held in abeyance while we would begin to determine what, in fact, a compilation of anything up to 12 plants using the Long Island Sound waters for, you know, exchange -- what effects it would have upon the sound?

MR. STEIN: I don't want to take too much time. I think what you said is correct. I was going to make a general recommendation to you, Mrs. Stern. I think you have some very profound analytical thrust in your statement. I would suggest though that you talk to some of the people here just on a technical basis.

Now, I think when you talk about beginning to understand, that is correct, and I said that to our Administrator the other day. This question comes up with us all the time.

For example, in Lake Michigan the biologists have said they would need five years to figure the effect on the biota. With all deference to the biologists -- as a matter of fact, some of my best friends are biologists -- when they say five years, I think this is just the beginning. And I told the Administrator we have to make a decision in five weeks.

If we could get a moratorium and we could have an answer in a year, this might be a viable position. But if -- with the growing and burgeoning demands that we have for electric power in other industries -- we proceed on the assumption that we are going to stop everything for a year and at the end of the year we are going to be all wise and come up with the answers, I'm not sure we're not deluding ourselves.

Because I have been in this business a long time. As I say, as I look at these people at this table, most of these people I have known for 25 years. We have been through it. We have made these proposals when we were young and innocent ourselves. We came back in a year. There were the same arguments that went on when we left.

MRS. STERN: Whose arguments, sir?

MR. STEIN: The same arguments on both sides.

MRS. STERN: Oh, I see what you're saying.

MR. STEIN: In other words, nothing was resolved.

Now, the question I think that we have with the powerplants or any other industry that is concerned is unless you can come up within a relatively short time-- By the way, this doesn't denigrate what Mr. Gregg says. I was checking with Mr. Klashman. As far as I'm concerned, we are not looking for money either. And I would be delighted --

MRS. STERN: I didn't put you on the list.

MR. STEIN: Yes, it's on the list at the end. (Laughter)

I believe we have to have the long-range approach. But I also think, if you are going to have a problem, we have to come up with relatively short-range solutions to let the economy go forward.

We have had several cases in Florida and many other places. When we operate in a democracy, people get what they can.

I think I have tried to vigorously enforce it. But I tell you I would hate to put this up to a vote of the people, say, in southern Florida as to whether they wanted clean water or air conditioners, because I might lose. And this is what we have to recognize. The people are going to get what they want.

In other words, what I'm suggesting to you is if we are going to have, as I see it here, two powerplants coming in by 1975 and that's what you need for your electrical energy, I think by the end of the year we are going to have to make some basic decisions on whether we are going to let these powerplants proceed, and with what safeguards to preserve or protect the environment, and we're really not going to have five years to make the study. Nor can I find, if we give a year's moratorium for the study of this, any scientist who is going to assure me we are going to have the definitive answer.

This is why I asked you to talk to them.

There is one more technical point I would like --

MRS. STERN: Can you hold that? I'd like to comment.

MR. STEIN: Yes.

MRS. STERN: Because you said something which I disagree with, sir. You said the people are going to get what they want. But the people aren't necessarily told what the tradeoffs are. They only know that their own comfort is geared to, let's say, the air conditioner because it's awfully hot outside. But you know better than I do that 65 percent, more or less, of the electrical energy generated in this country is not for the air conditioner. It's not for the direct convenience of the person. It's more likely for the industry that created the air conditioner.

But I think the feeling that has to be conveyed from me back to you is that the facts of the matter are not always put before the people. The people are not always given the choice.

It may well be that I am prepared to make that choice, but you have to tell me what I am giving up in order to be comfortable every morning and to know that my child may or may not have clean water in which to swim or water to drink or shellfish to eat or whatever else you want to get out of the waters. And this is our argument.

Now, it seems to me-- I'm sorry, but I think that was an unfair-- All right.

MR. STEIN: I understand your position, and we tried to do this. With all deference to industry, when your child gets up in the morning, 65 percent you say goes to industry that provides him with creature comforts that make it pleasant for him to get up and make it pleasant for you to get him ready to go to school. And we have made these things plain of what the people want and the choices. We try to do this all the time. And these are the choices.

Now, if you will, I'd like to ask you to just check one further point --

MRS. STERN: Certainly.

MR. STEIN: -- on chlorination.

MRS. STERN: Yes. What --

MR. STEIN: I don't believe you understood.

MRS. STERN: All right.

MR. STEIN: And I'm not sure we can go into a full explanation here. But, generally speaking, in a municipal water supply, for example, in a public water supply, the engineers just put a shot of chlorine in the water as a prophylaxis before they shoot it through the pipes in case it runs into anything at the pipes. This chlorination is not a substitute for treatment.

In other words, what they are saying is, "We'll give it the best possible treatment. But just in case" -- and we know this -- "just in case some bacteria, some viruses, some pathogens escape the operation, we'll give it a shot of chlorine, enough of a shot of chlorine so it will be dissipated and absorbed when it gets out."

But it's purely a technical point where these people who are responsible for this want to assure you and the people of the area that you're going to have a waste effluent without any disease-bearing organisms in that. They want to be sure that, despite their best efforts, if any have gotten past their various devices to kill them, at the last shot they are going to wipe any out that are left.

MRS. STERN: Is that in addition to so-called secondary?

MR. STEIN: Yes, it's extra. It's an extra shot just in case you miss something.

MRS. STERN: Okay.

MR. STEIN: Fine. Thank you very much. Are there any other comments?

MR. GLENN: I only have one question, Mr. Chairman. I don't mind prefinancing this hour of overtime after 5:00 o'clock, but when can I expect my check to pay back for it? (Laughter)

MR. STEIN: You will get it soon. There is one more witness from Connecticut.

MR. CURRY: Connecticut has one more. As far as I know, there is only one more person from Connecticut who would like to be heard. His name is Michael Kaufman.

STATEMENT OF

MICHAEL KAUFMAN

KAUFMAN ADVISORY SERVICES, NEW HAVEN, CONNECTICUT

MR. KAUFMAN: My name is Michael Kaufman of

Kaufman Advisory Services, 603 Central Avenue, in New Haven. And I have a few questions regarding what was heard here tonight, and also in an article which I wrote which was published in the New Haven Register. I take the long-term viewpoint, and I ask this committee and anyone else the answers.

I quote:

"The fear and hysteria generated by those that criticize pollution and talk about the subject prompts this article.

"For a long time I have been trying to get the answer to what happens to the pollutants and the anti-pollutant devices once the latter are filled with the pollution they are designed to capture. Are they buried in the ground, sunk in the oceans, or what?

"If either is true, the water that flows through the underground strata will pick up the pollutants and redistribute them throughout the land to pollute the land again, which is also true as to the waters of the oceans and seas.

"Lately, to combat oil pollution on the seas, it has been noted that science has developed microbes that destroy the oil that is deposited in the oceans when an oil tanker has an accident and loses its cargo in the sea.

Question: Do the winds then pick up the sea water with the microbes in it, bring this water or vapor over our land, deposit the water in the form of rain or snow which eventually finds its way into our oil fields to destroy our oil resources, our economy, and us?

"No one that I have spoken to can supply the answer. And before we are destroyed by the unthinking people who cry pollution and force the businessman to spend his money needlessly or, worse, force him out of business because he cannot afford the cost of pollution devices, we had better come up with the answer."

Perhaps one of you gentlemen here tonight has the answer to these questions. If not, all this anti-pollution hysteria must come to an abrupt end until the answer is forthcoming.

And my other comment was tonight that the New Haven Register ran an article a short time ago stating that fish in the United States waters do not have a dangerous level of mercury. They are eatable. After the mercury scare that ruined many businessmen because people in the fish business and the fish industry could not sell their fish, they had to take back all the fish that they had sold, and they lost millions and millions of dollars until many were forced out of business because of this stupidity, this fear.

What recourse have these men to make the government, its agencies and bodies pay them monetary damages for all this needless ruination that was caused by the stupid people crying scare pollution?

MR. STEIN: Thank you, Mr. Kaufman.

Are there any comments or questions?

MR. KAUFMAN: I don't want comments, sir. I want answers. And if you don't have the answers, I suggest that this board be dissolved. You're wasting my money and the taxpayers' money and not accomplishing anything.

MR. STEIN: Well, we have heard your comments, and I have asked for any comments, questions, answers anyone wants to rejoin to Mr. Kaufman.

MR. KAUFMAN: I'm asking the questions. I'm being given the pushoff. Aren't I? Is that the abrupt kick in the pants and get out of here because I asked something that can't be answered?

So I'll come right out very, very plainly. This committee and all your antipollution committees are an insult to the intelligence of the intelligent people in our country. You're a waste of my money. I pay taxes. And I wish to God I didn't have to pay taxes to support you in jobs you have no right to have because you're incompetent.

MR. STEIN: Are there any comments or questions?

MR. KAUFMAN: It's not funny.

MR. STEIN: If not, thank you very much.

MR. KAUFMAN: Not funny, Mr. Stein.

MR. STEIN: If not, thank you very much for your constructive suggestions.

We stand recessed until 9:30 tomorrow morning.

(Whereupon, at 5:55 p.m., the conference was recessed, to be reconvened at 9:30 a.m., Wednesday, April 14, 1971.)

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